



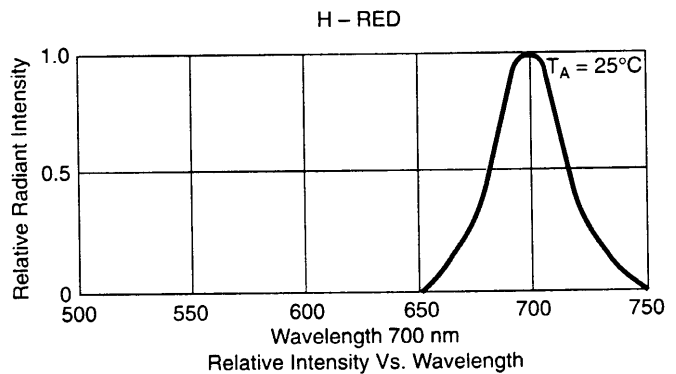
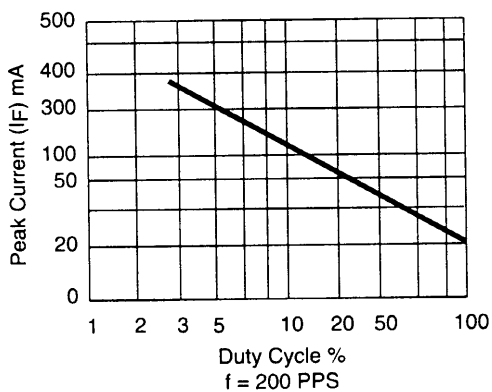
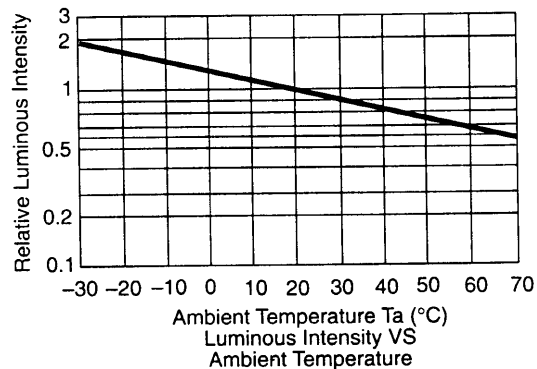
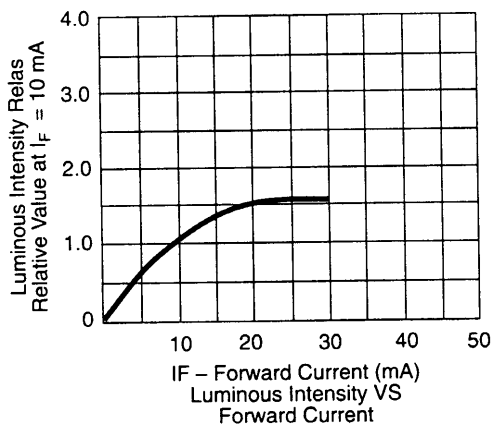
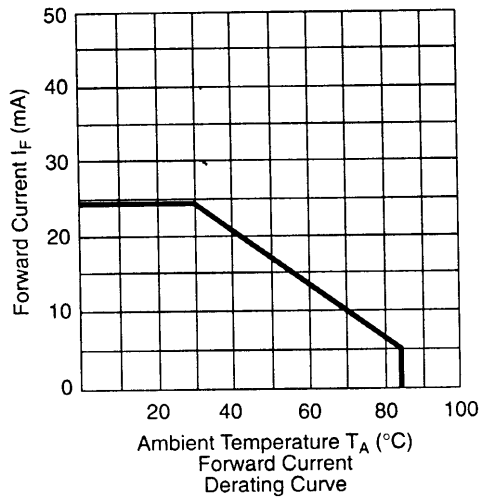
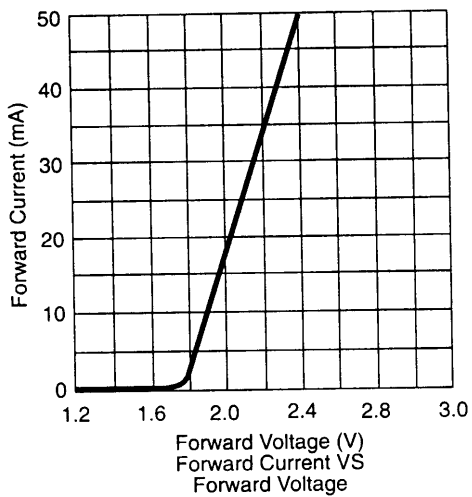
Technical data

Absolute max. ratings ($T_A = 25^\circ\text{C}$)				N pure orange (GaAsP/GaP)		G-SG green (GaP)		Y yellow (GaAsP/GaP)	B blue (SiC)	
Reverse voltage	V_R	5	5	5	5	5	5	5	5	V
Forward current	I_F	25	30	30	30	25	25	30	50	mA
Forward current (peak) ($\tau \leq 10 \mu\text{s}$)	I_{FS}	150	150	150	150	150	150	150	200	mA
Power dissipation	P_T	120	105	105	100	105	105	105	105	mW
LED's: Operating temperature	T_A	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-55^\circ + 85^\circ$	$^\circ\text{C}$
Storage temperature	T_{stg}	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-55^\circ + 100^\circ$	$^\circ\text{C}$
DISPLAY's: Operating temperature	T_A	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	—	$^\circ\text{C}$
Storage temperature	T_{stg}	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	$-40^\circ + 85^\circ$	—	$^\circ\text{C}$

Operating characteristics ($T_A = 25^\circ\text{C}$)				N pure orange (GaAsP/GaP)		G-SG green (GaP)		Y yellow (GaAsP/GaP)	B blue (SiC)	
Forward voltage (typ.) ($I_F = 20 \text{ mA}$)	V_F	2,0	2,0	2,0	1,85	2,2	2,2	2,1	3,8	V
Forward voltage (max.) ($I_F = 20 \text{ mA}$)	V_F	2,5	2,5	2,6	2,5	2,5	2,5	2,5	4,4	V
Reverse current ($V_R = 5 \text{ V}$)	I_R	10	10	10	10	10	10	10	10	μA
Wave length at peak emission ($I_F = 20 \text{ mA}$)	λ_P	700	625	610	660	565	555	590	470	nm
Spectral line half-width ($I_F = 20 \text{ mA}$)	$\Delta\lambda$	45	45	35	20	30	30	35	70	nm
Capacitance ($V_F = 0 \text{ V}; f = 1 \text{ MHz}$)	C_0	40	12	15	95	45	45	10	20-40	pF

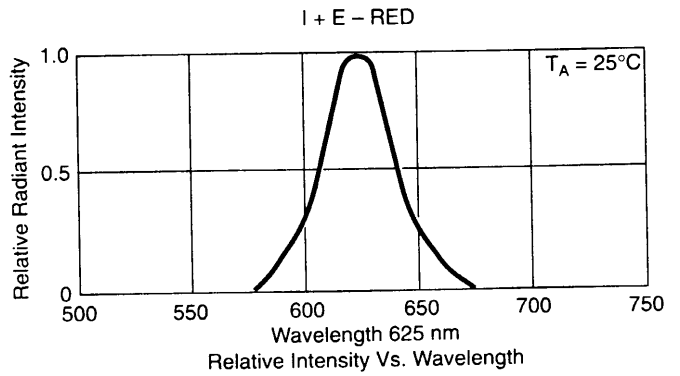
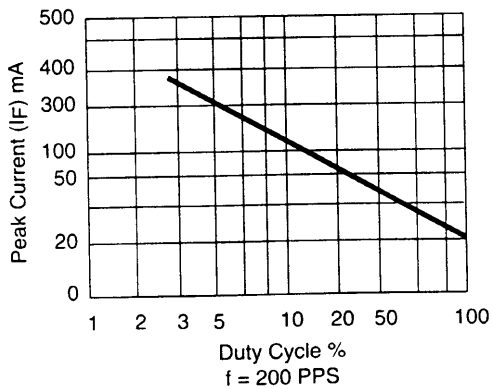
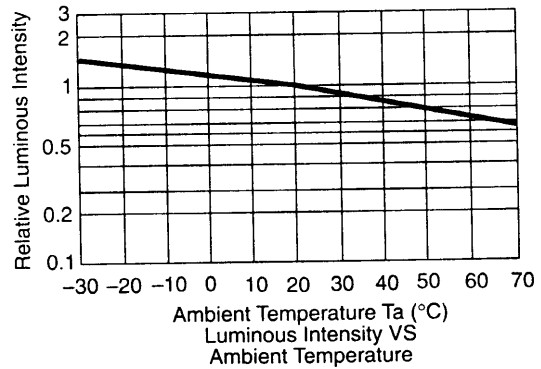
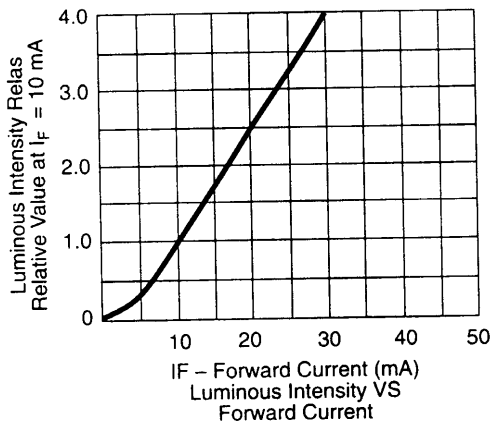
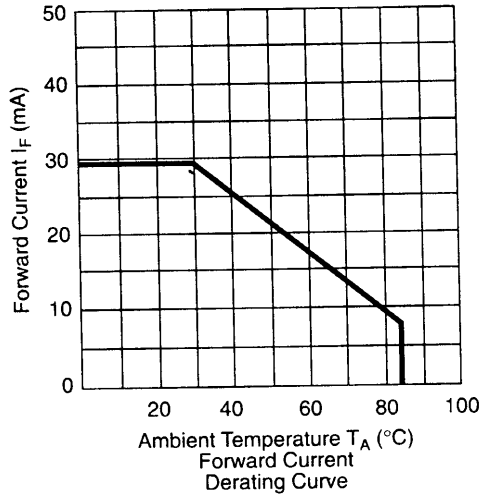
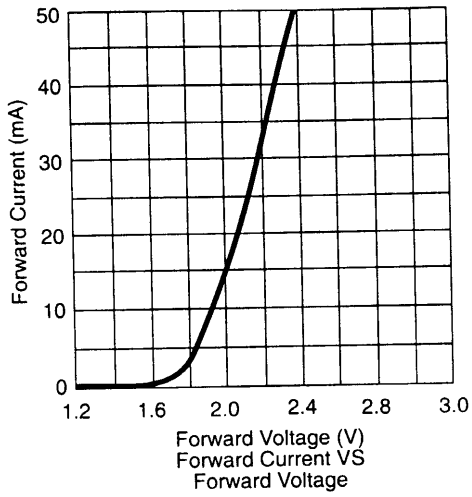


GaP



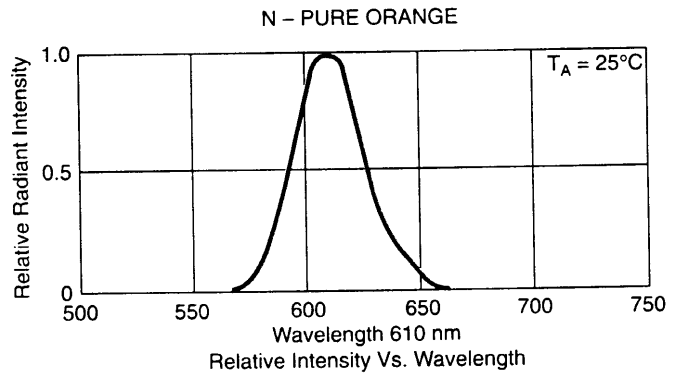
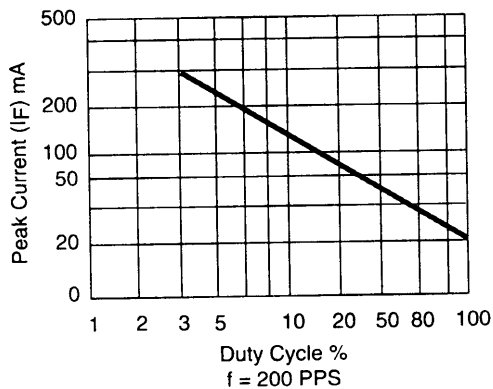
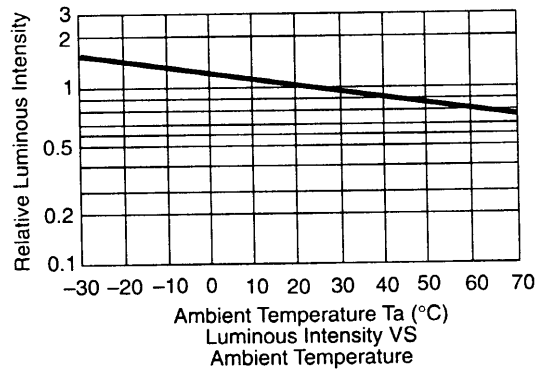
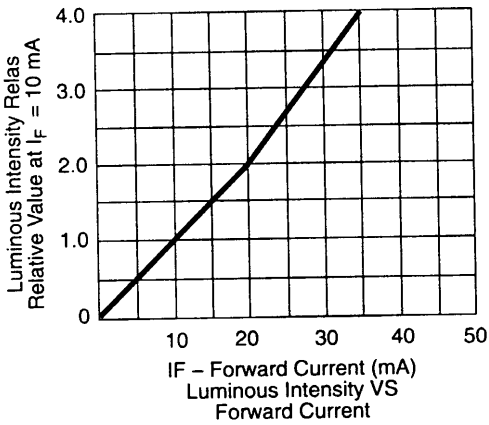
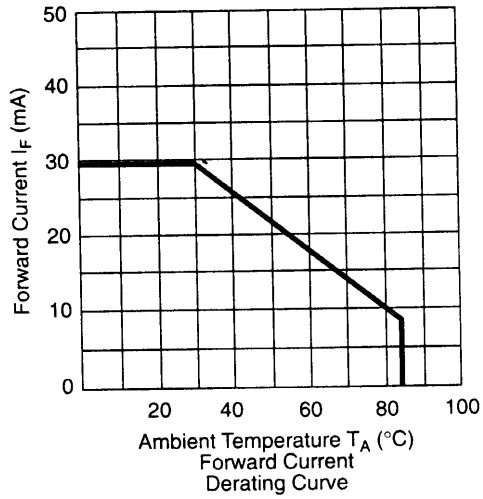
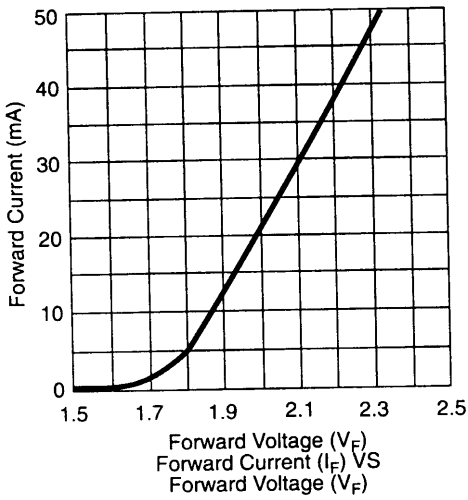


GaAsP/GaP

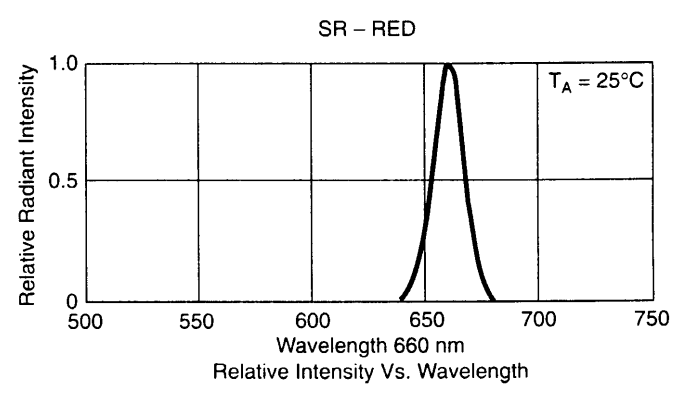
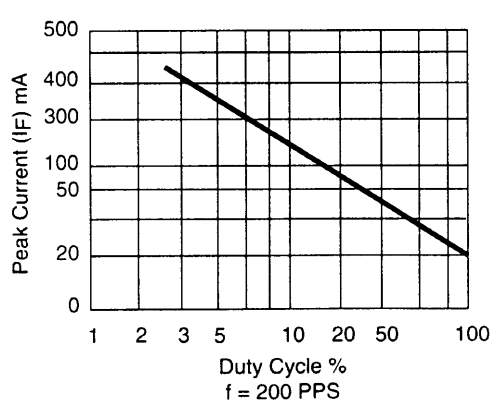
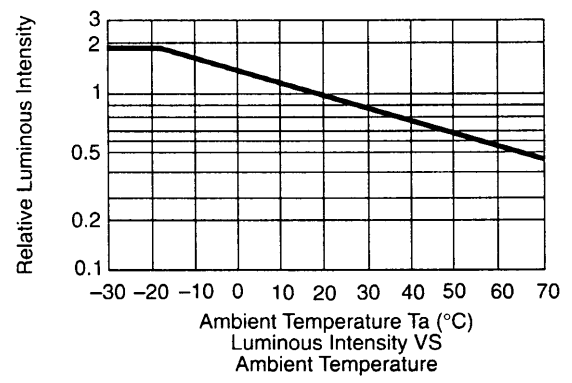
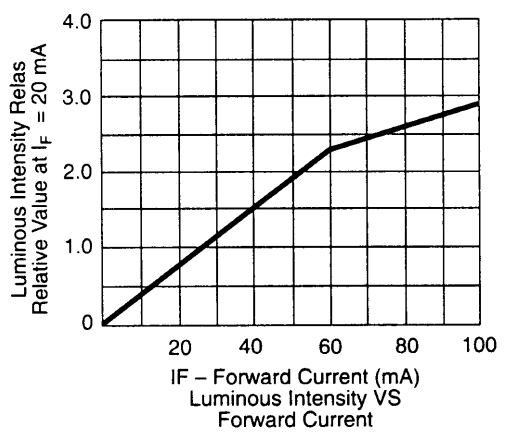
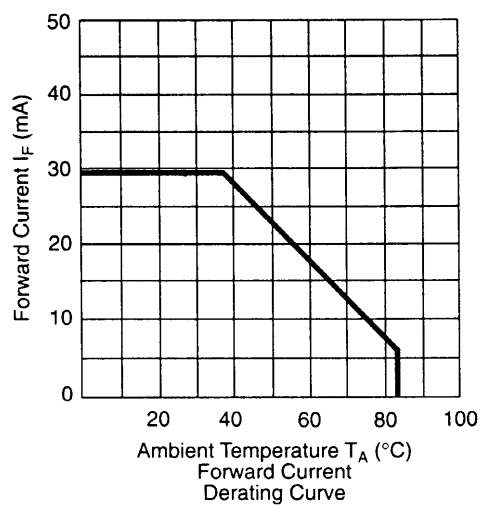
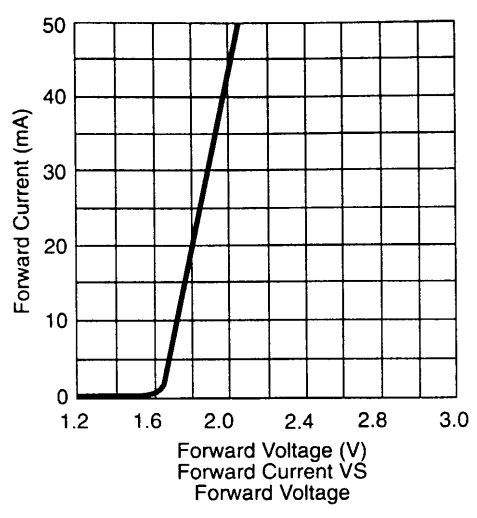




N
GaAsP/GaP



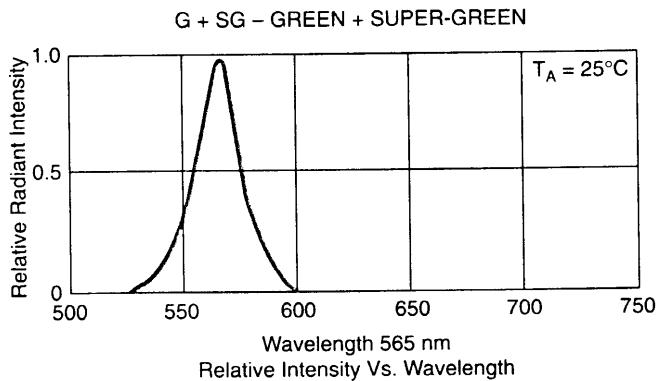
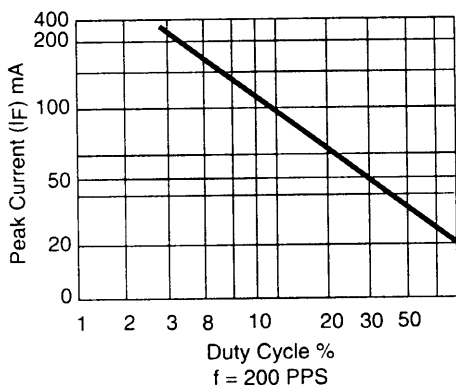
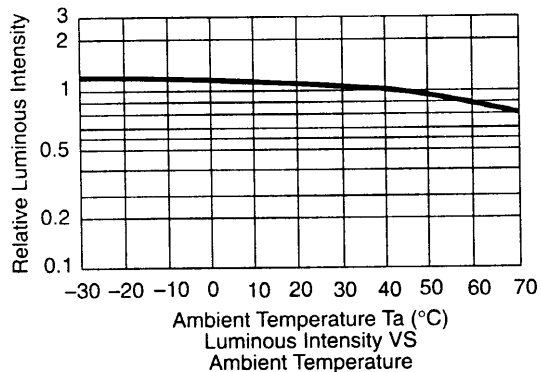
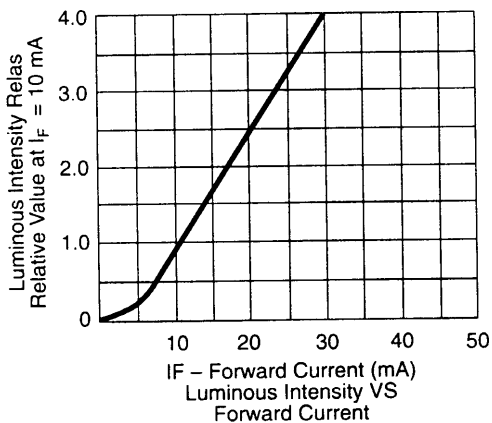
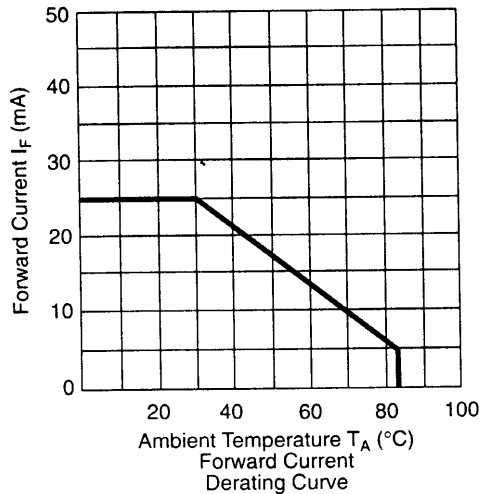
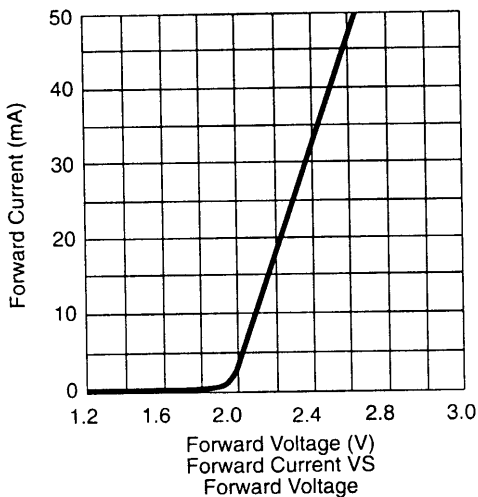
GaAlAs





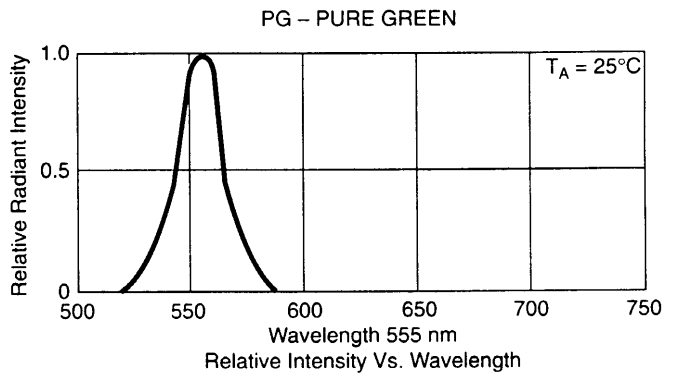
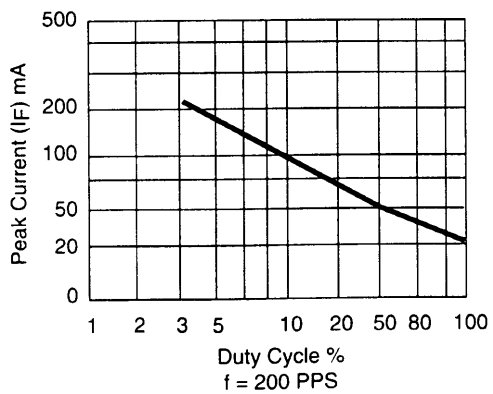
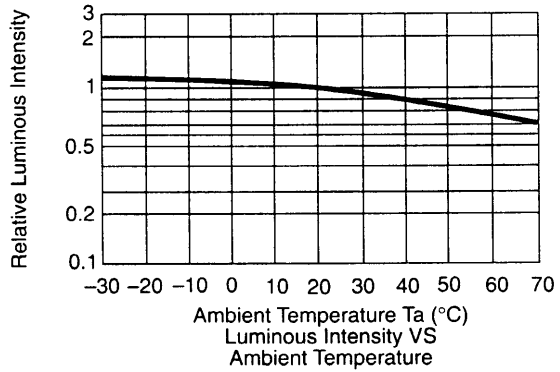
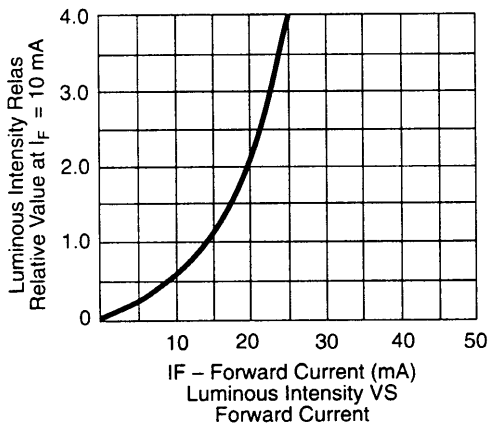
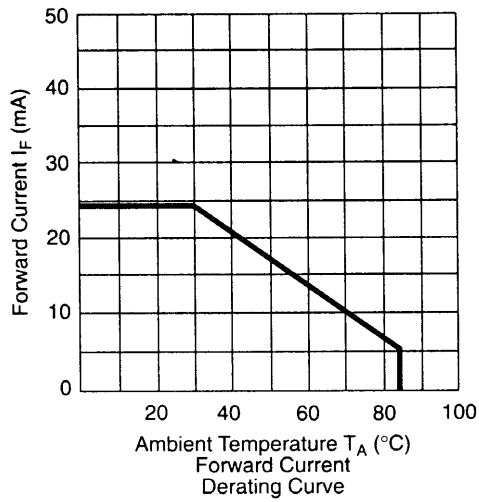
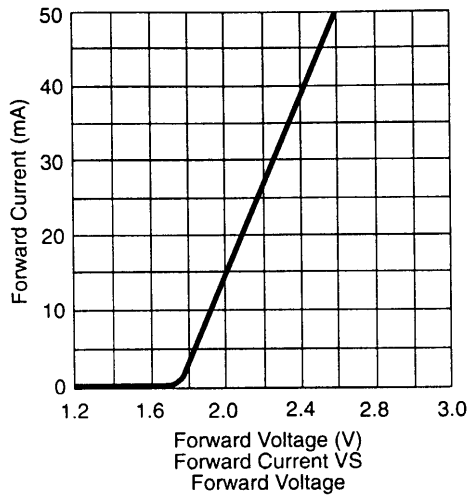
G + SG

GaP



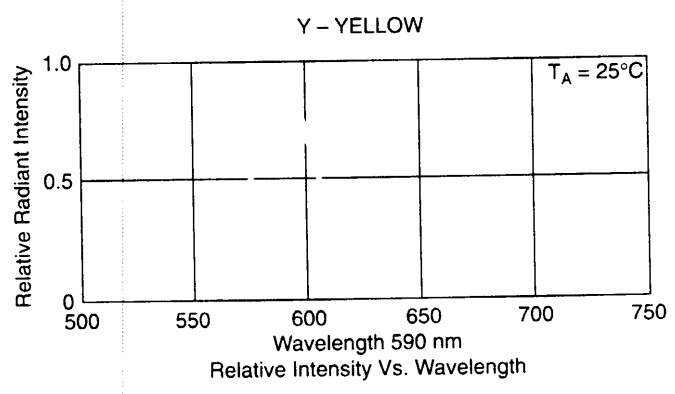
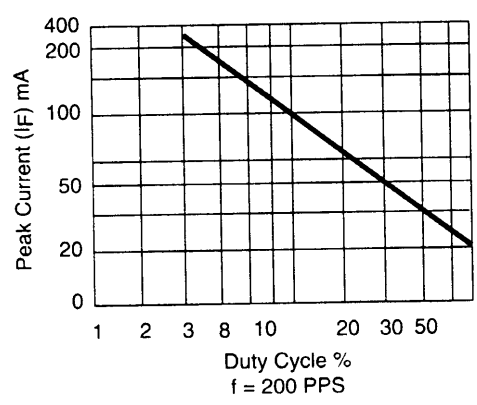
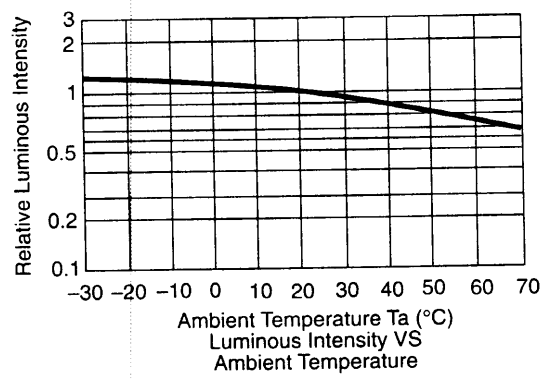
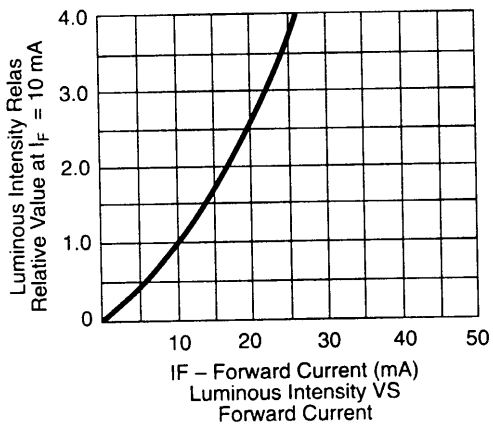
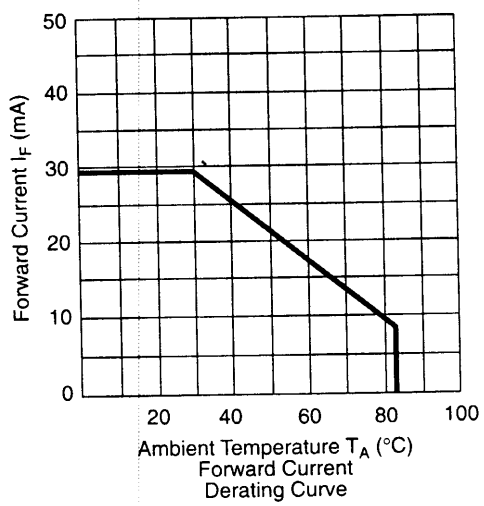
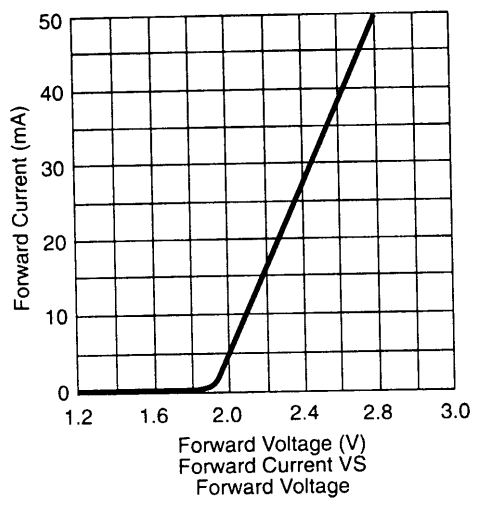


GaP

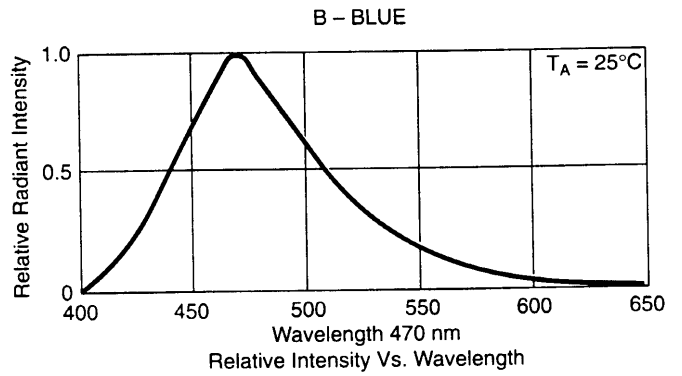
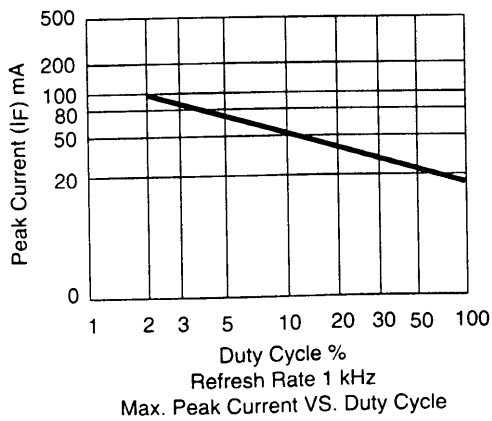
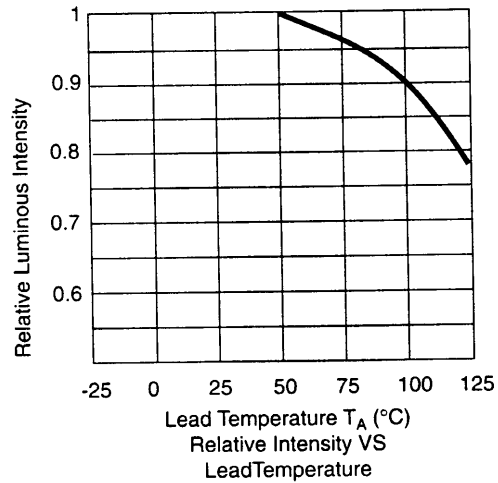
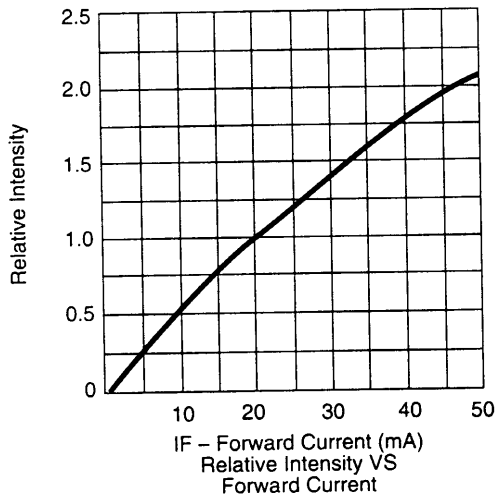
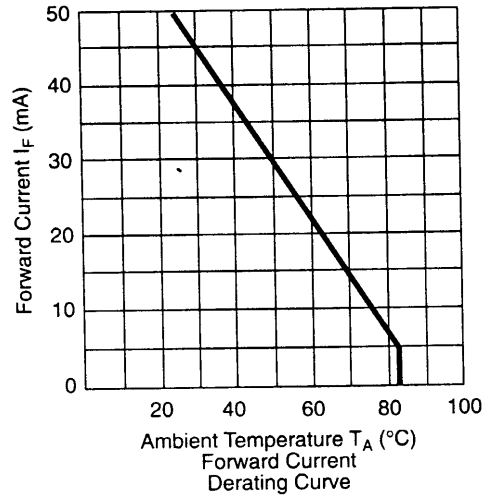
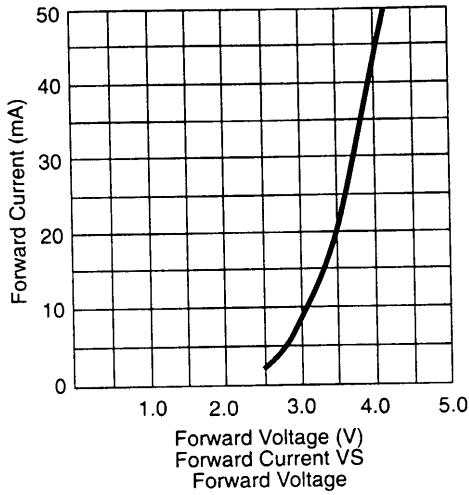




Y
GaAsP/GaP



SiC



Selection Code for Standard LEDs

Group	Light intensity in mcd/10 mA (Exception: Low-Current LED's I _F = 2 mA)	
	min.	max.
F	0,1	0,2
G	0,2	0,32
H	0,32	0,5
I	0,5	0,8
K	0,8	1,25
L	1,25	2
M	2	3,2
N	3,2	5
P	5	8
Q	8	12,5
R	12,5	20
S	20	32
T	32	50
U	50	80
V	80	125
W	125	200

Code is marked on each packing

Selection Code for Super Bright LEDs

Group	Light intensity in mcd/20 mA	
	min.	max.
A	2	3
B	3,2	5
C	5	8
D	8	12,5
E	12,5	20
F	20	40
G	40	50
H	50	60
J	60	70
K	70	80
L	80	90
M	90	100
N	100	200
P	200	300
Q	300	400
R	400	500
S	500	700
T	700	1000
U	1000	1300
V	1300	1600
W	1600	2000
X	2000	2500
Y	2500	3000
Z	3000	3500

Code is marked on each packing



Selection Code for Displays

Group	Light intensity in μ cd/10 mA (Exception: Low-Current Displays I _F = 2 mA)	
	min.	max.
C	70	140
D	140	240
E	240	360
F	360	560
G	560	900
H	900	1400
I	1400	2200
K	2200	3600
L	3600	5600
M	5600	9000
N	9000	14000
P	14000	21000
Q	21000	31000

Code is marked on each packing

Colour Code for LEDs + Displays

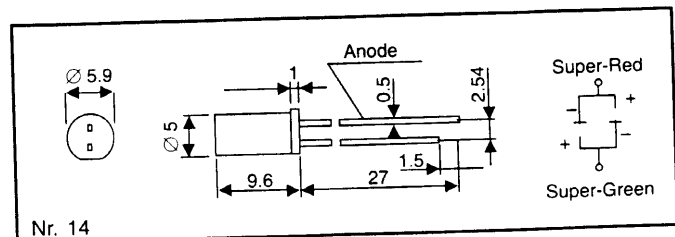
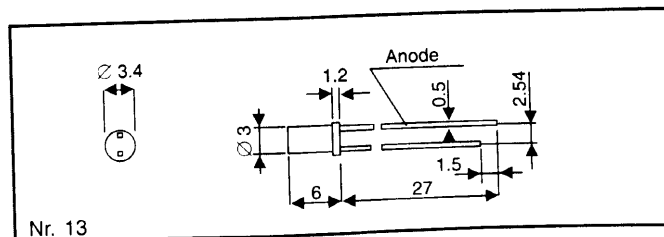
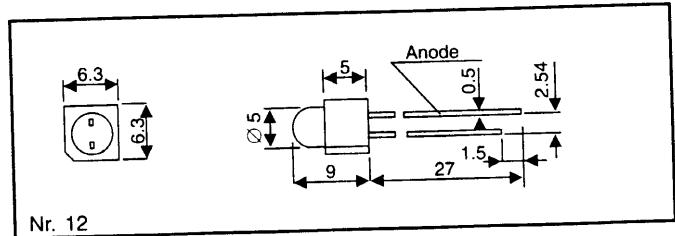
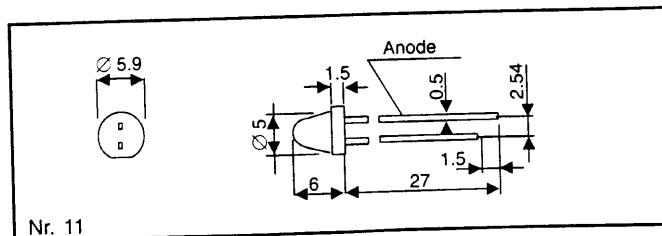
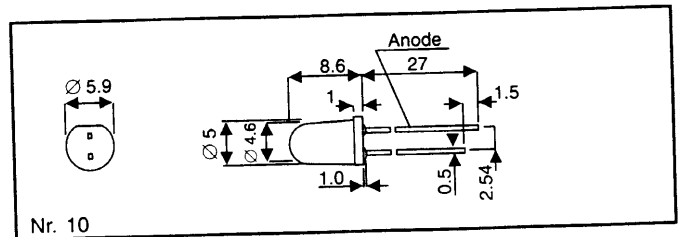
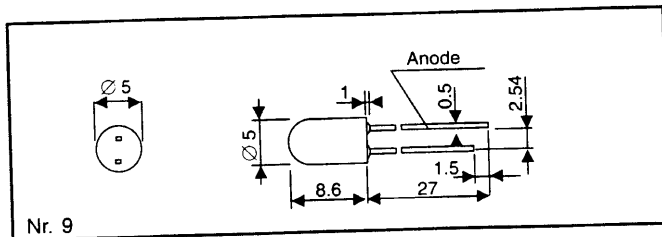
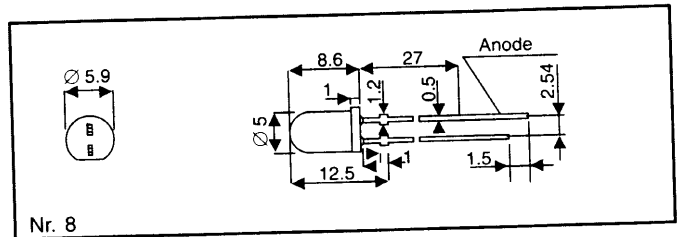
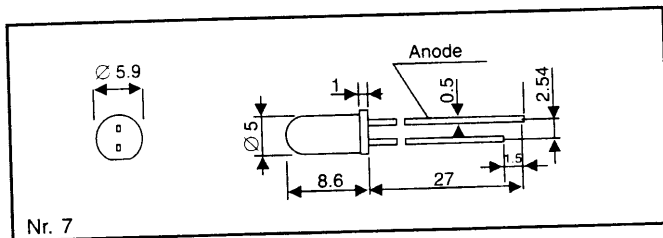
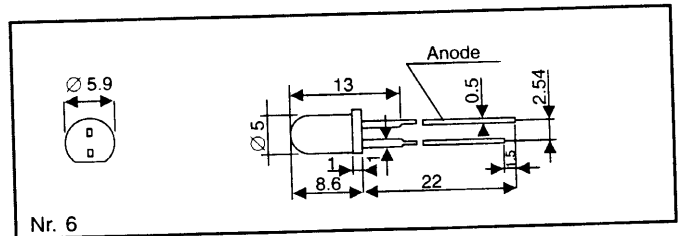
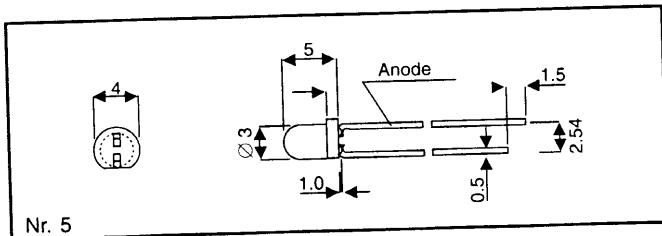
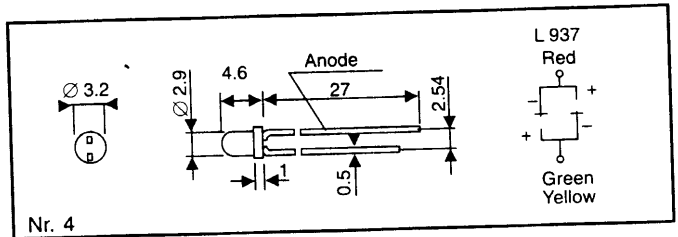
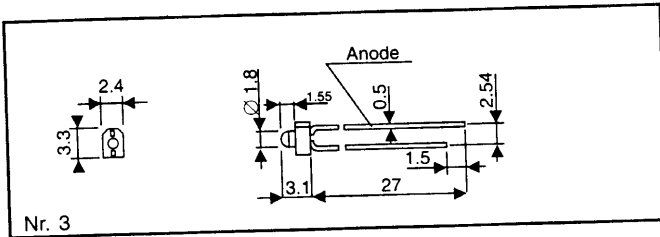
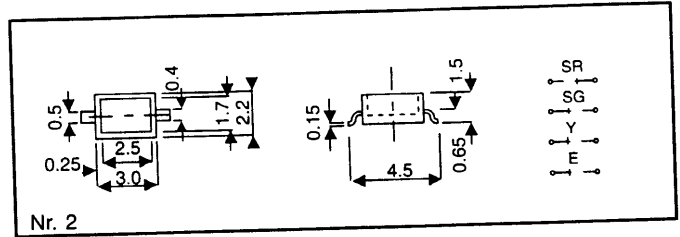
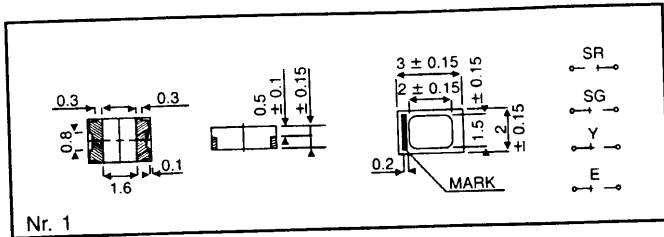
Group	Colour Classification			
	Yellow		Green	
	Dom. Wavelength (nm)			
	min.	max.	min.	max.
00			553	556
0			556	559
1	581	584	559	561
2	584	586	561	563
3	586	588	563	565
4	588	590	565	567
5	590	592	567	569
6	592	594	569	571
7	594	597	571	573
8	597	600	573	575

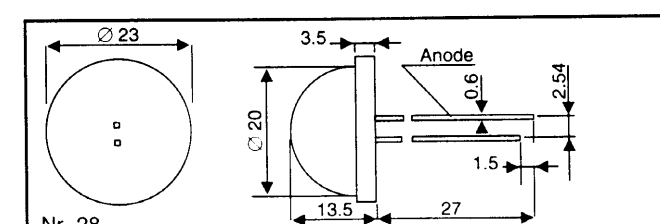
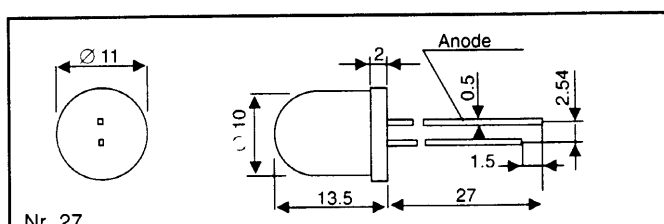
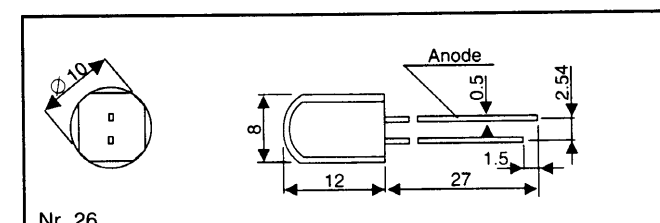
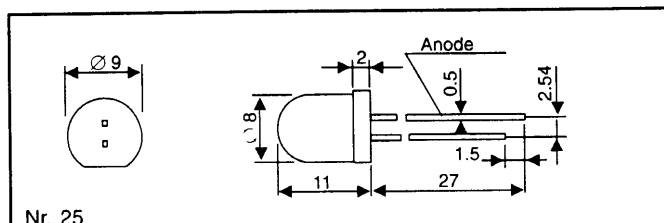
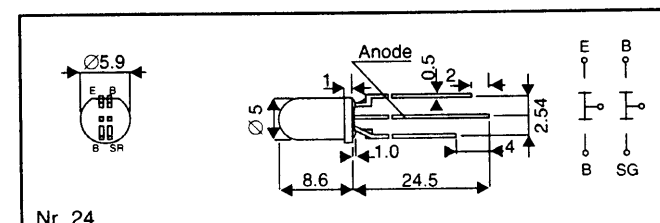
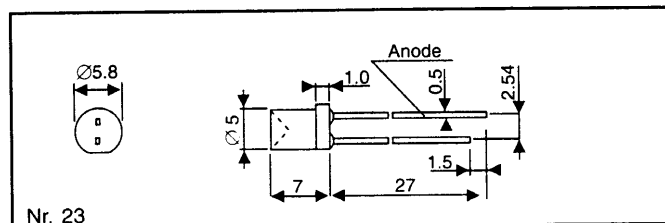
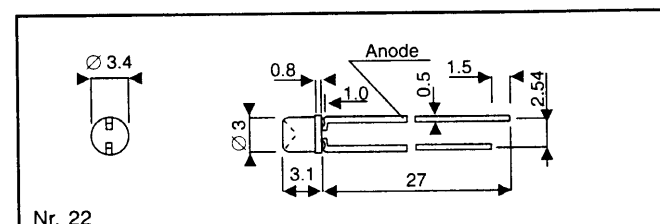
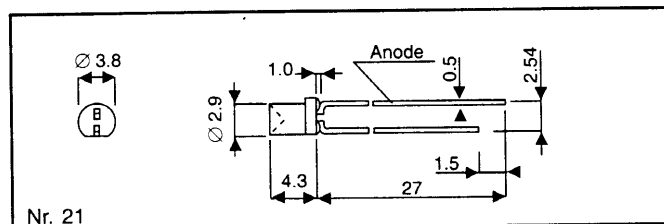
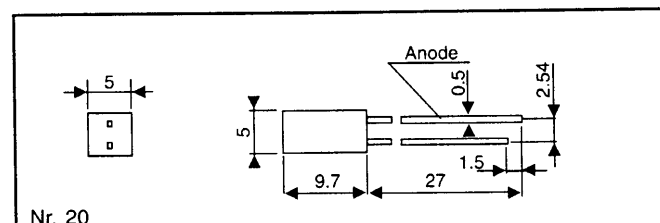
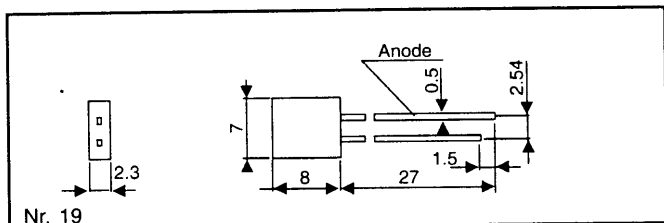
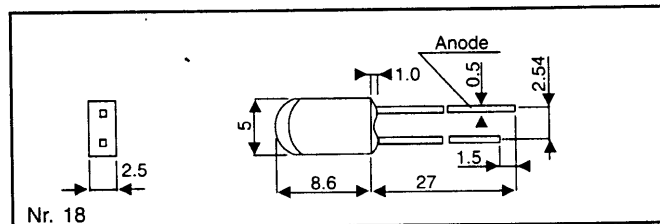
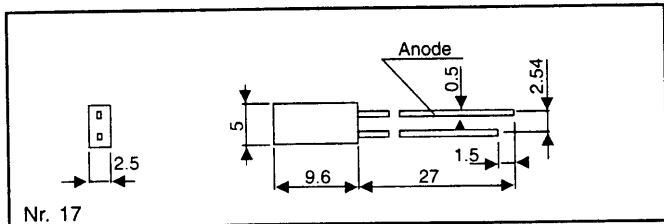
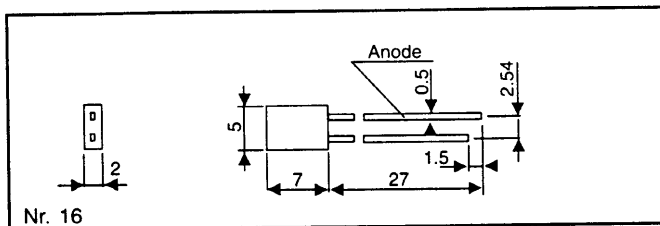
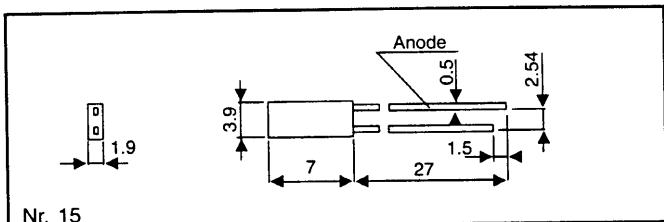
LED's marking on packing · Displays marking on package

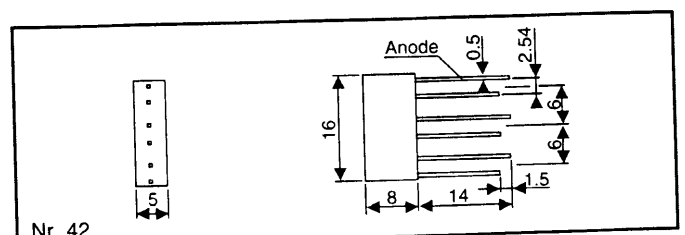
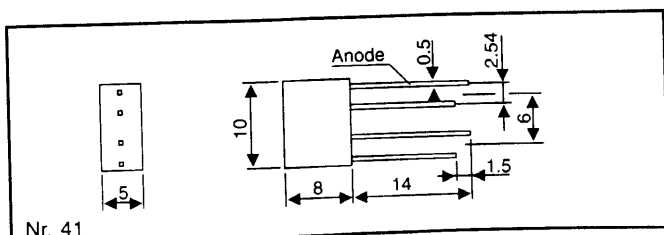
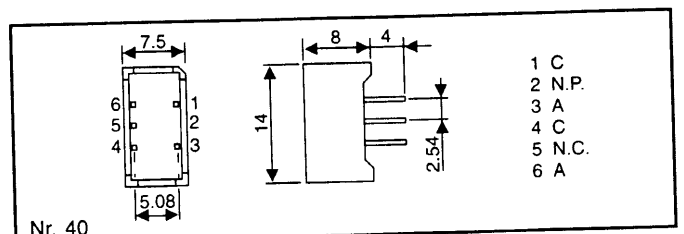
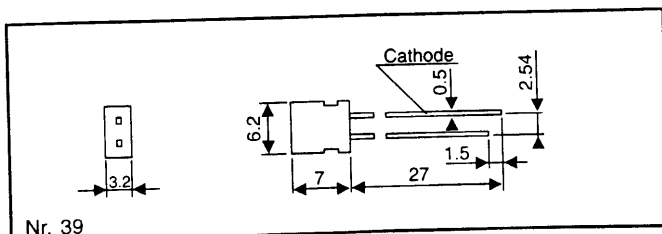
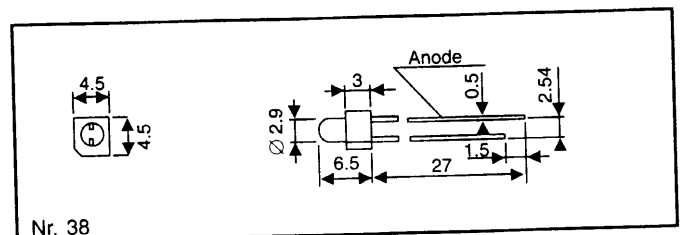
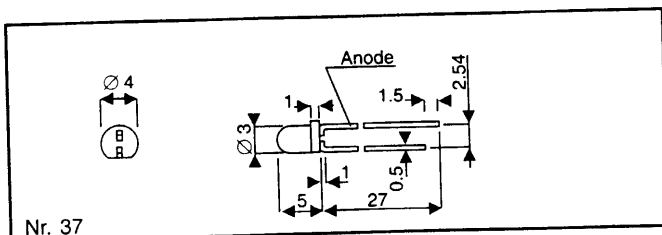
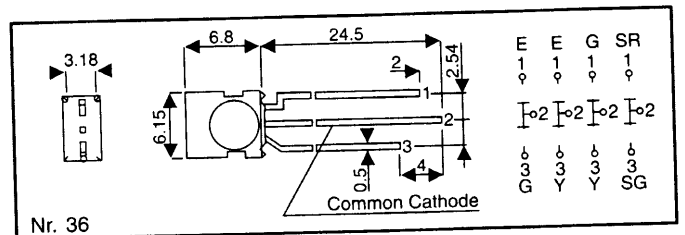
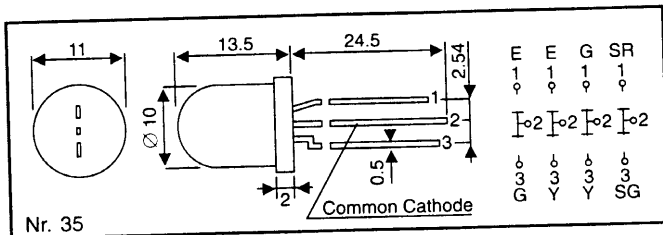
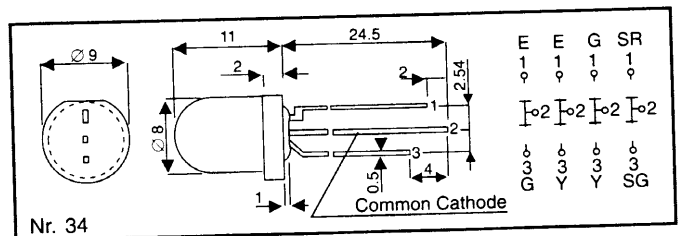
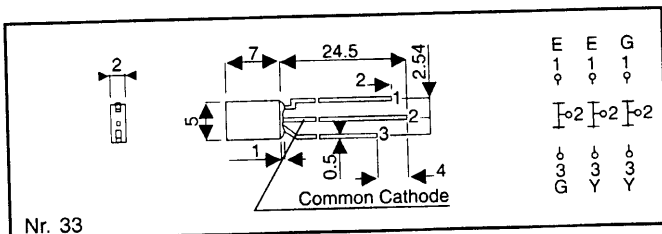
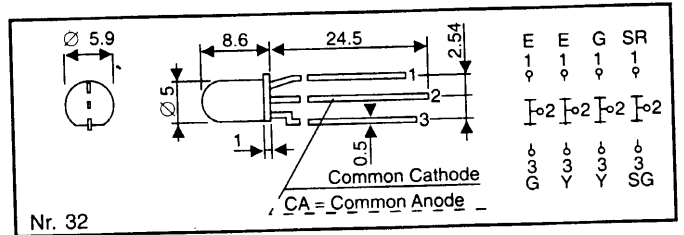
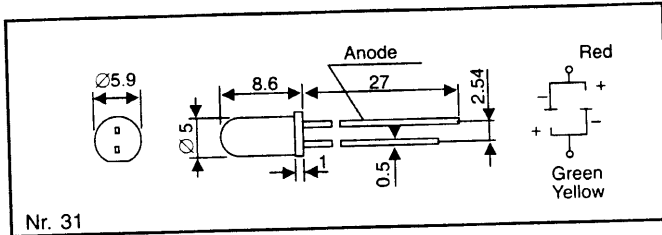
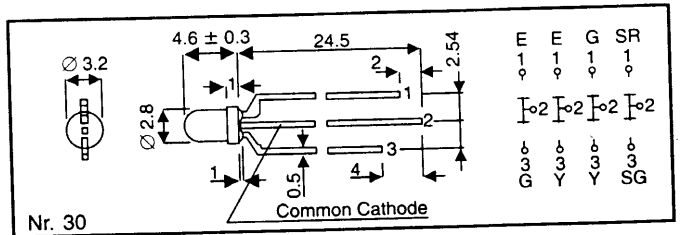
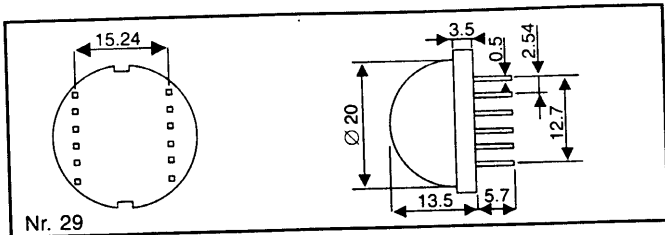
Soldering Instructions

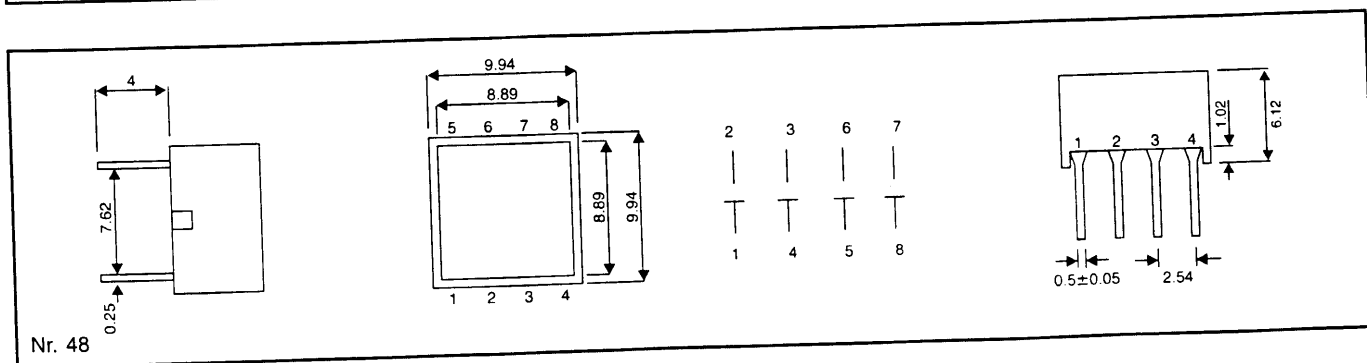
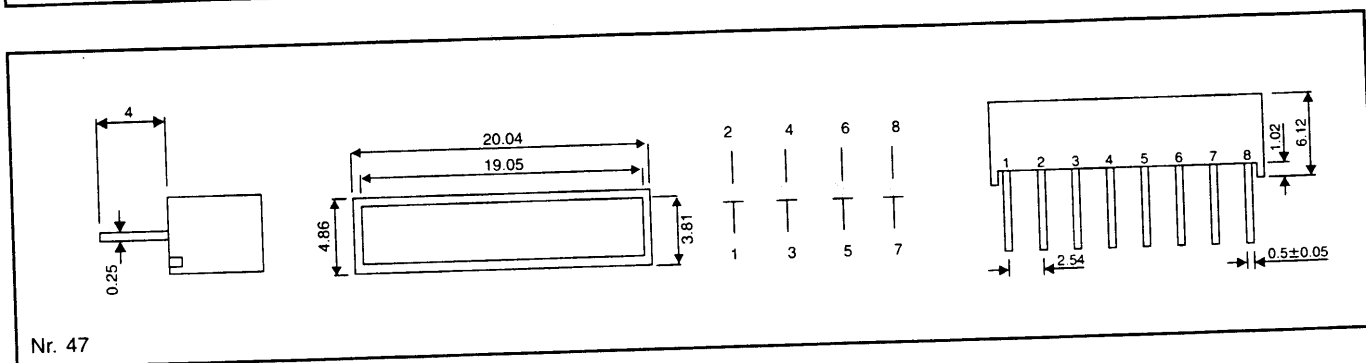
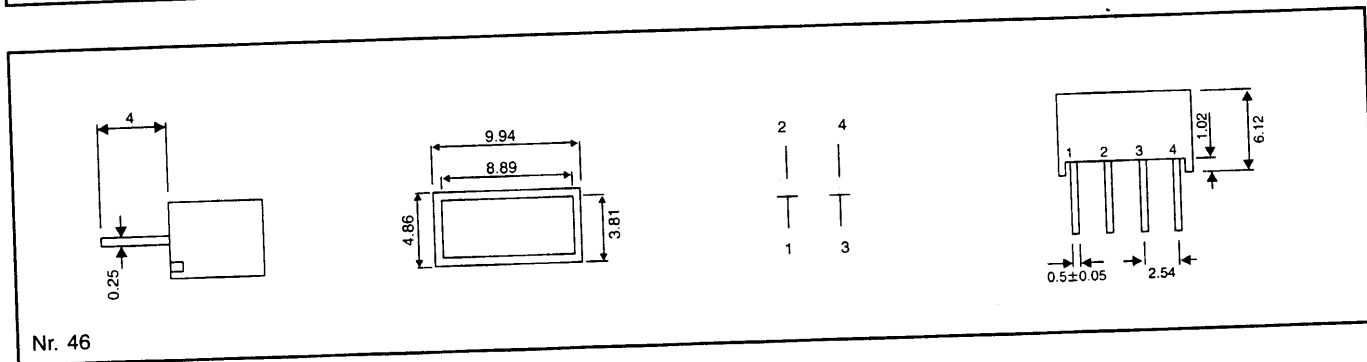
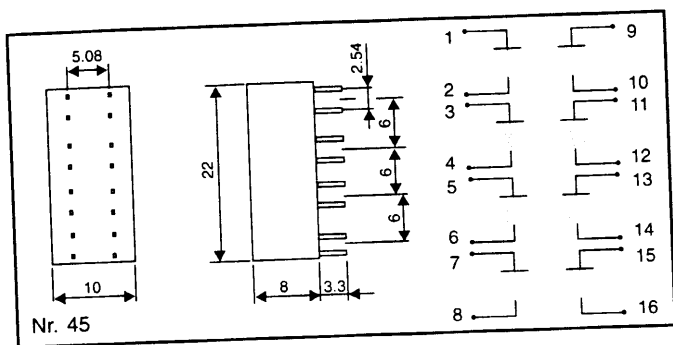
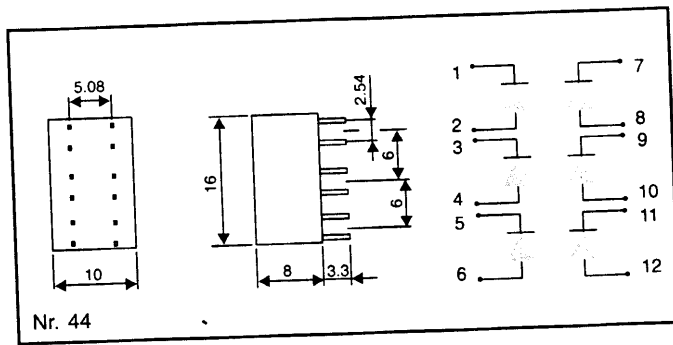
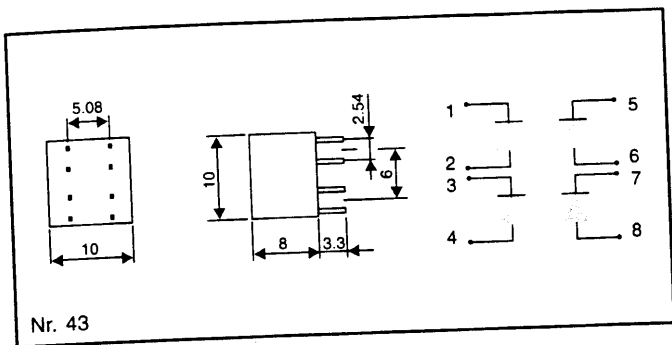
Types	Dip and wave soldering			Iron soldering (with 1.5 mm iron tip)		
	Temperature of the soldering bath	Maximum soldering time	Distance from solder joint to case	Temperature of soldering iron	Maximum soldering time	Distance from solder joint to case
LEDs	$\leq 260^{\circ}\text{C}$	3 s	> 2 mm	$\leq 260^{\circ}\text{C}$	3 s	> 2 mm
	$\leq 260^{\circ}\text{C}$	5 s	> 4 mm	$\leq 260^{\circ}\text{C}$	5 s	> 4 mm
DISPLAYs	$\leq 260^{\circ}\text{C}$	3 s	> 2 mm	$\leq 260^{\circ}\text{C}$	3 s	> 2 mm

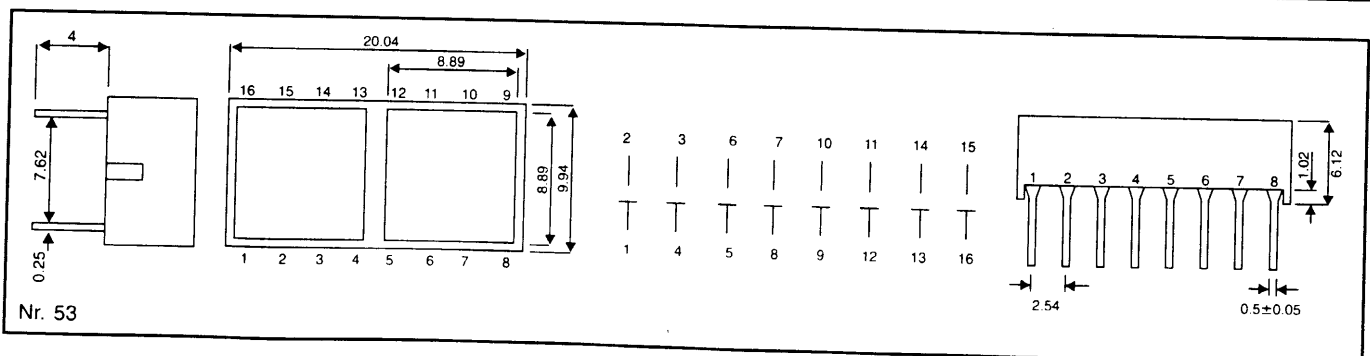
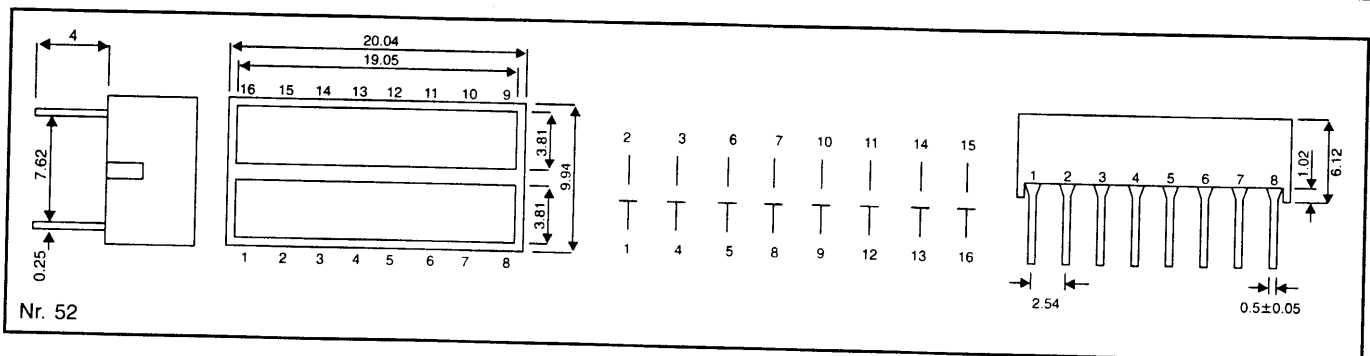
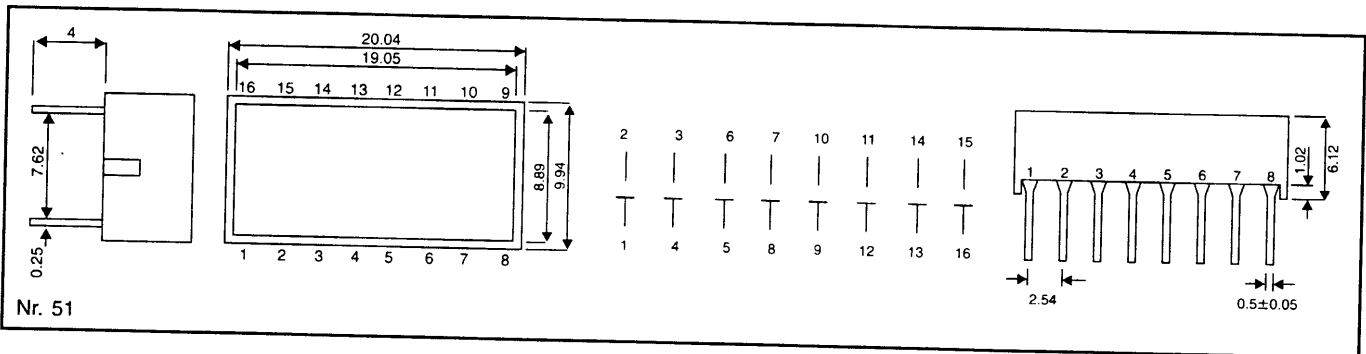
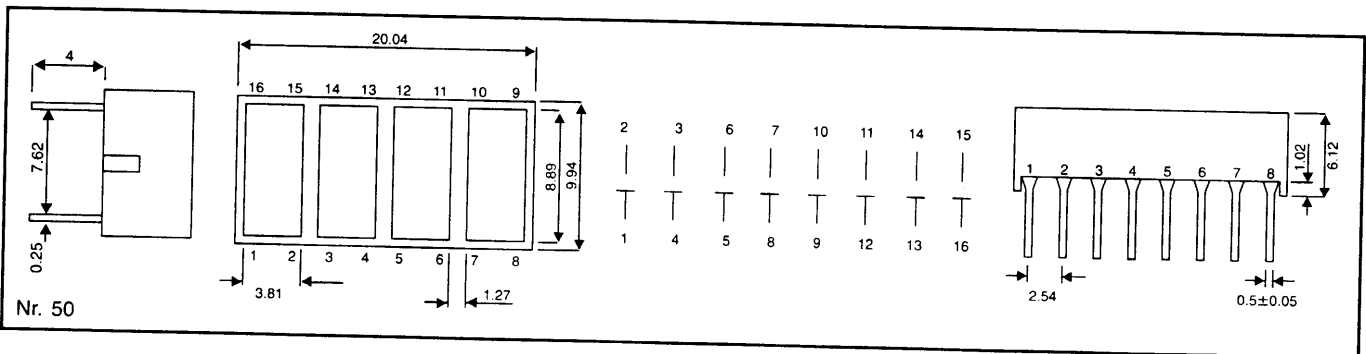
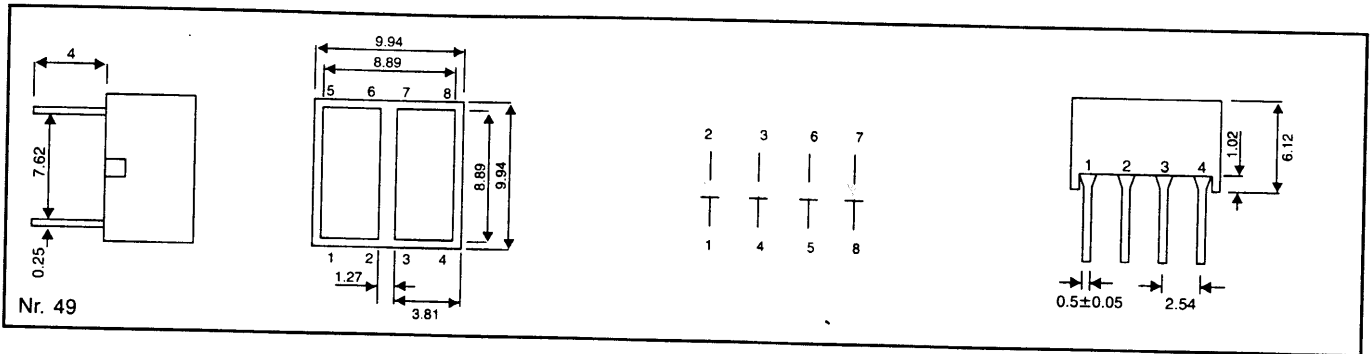
Intensity measurements: Since there is no international measuring standard, mcd ratings are comparable only between instruments from the same manufacturer.



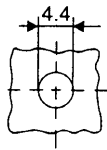
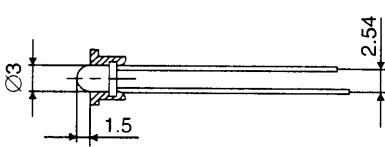
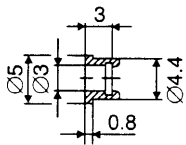




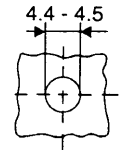
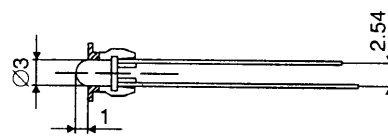
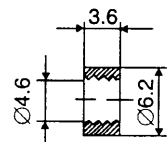
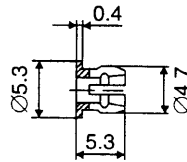
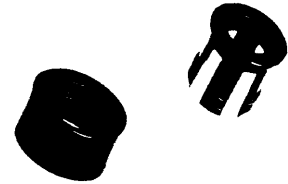




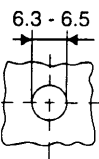
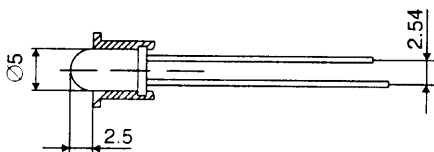
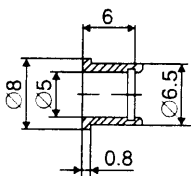
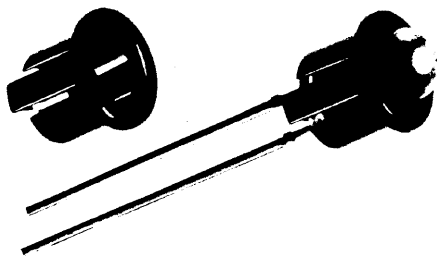
RTC-31



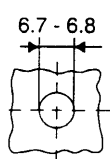
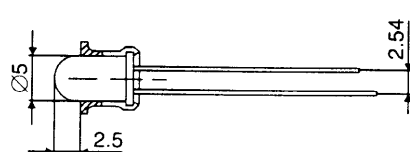
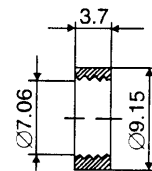
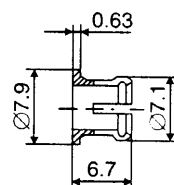
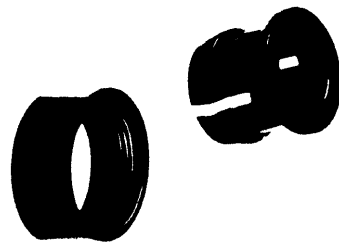
RTC-32



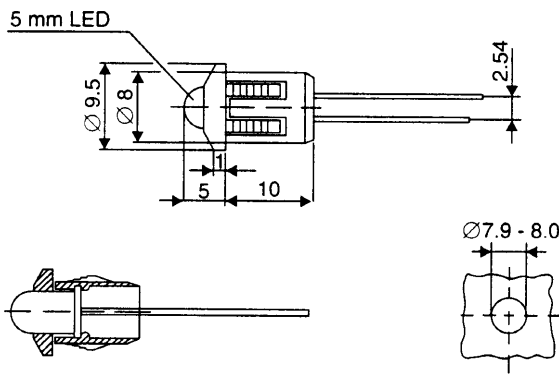
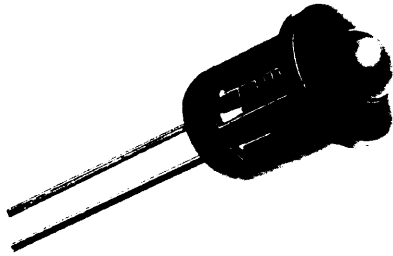
RTC-51



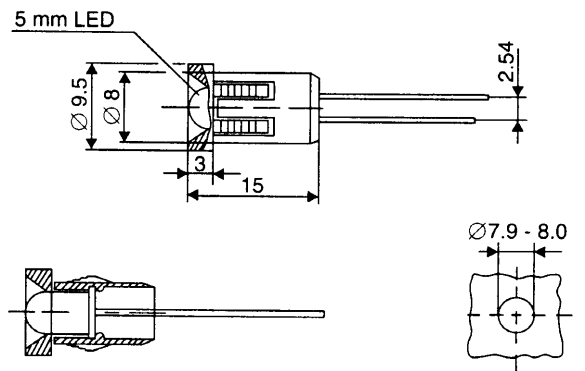
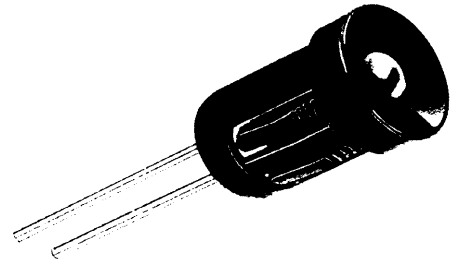
RTC-52



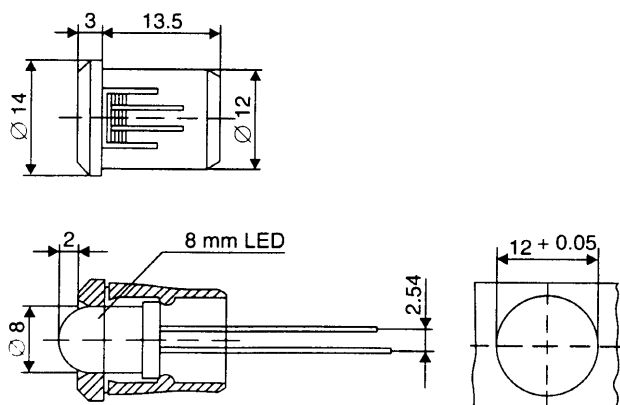
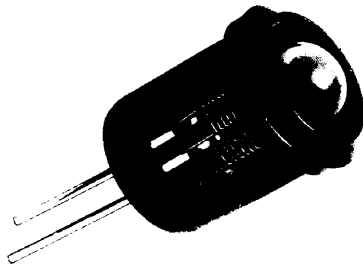
RTF-5010



RTF-5020



RTF-8080



RTF-1090

