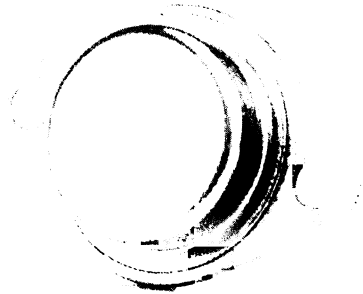




PMD 10K, 11K SERIES

150 WATT (12 AMP CONTINUOUS, 20 AMP PEAK)



FEATURES

- Electrical specifications guaranteed for operating junction temperature range of 0 - 200°C
- Guaranteed and 100% tested for I_{SB} (Secondary Breakdown Current) insuring maximum performance at high energy levels
- Low thermal resistance for more useable power and lower operating temperatures
- Hermetically sealed

DESCRIPTION

The PMD 10K Series of devices are three-terminal NPN Darlington Power Transistors. The PMD 11K Series of devices are PNP Darlington Power Transistors. These devices are monolithic epitaxial base structures with built-in base to emitter shunt resistors. The devices are CVD glass passivated to increase reliability and provide reduced high-temperature reverse leakage current. This important feature enables this series of Darlington devices to meet guaranteed operating junction temperatures of 200°C. Internal diode protection (D1) of the Darlington configuration is built into the structure to limit the device power dissipation during negative overshoot.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MAXIMUM	UNITS
Collector Emitter Voltage PMD10K, 11K80 PMD10K, 11K100	V_{CEO}	80 100	Vdc
Collector Base Voltage PMD10K, 11K80 PMD10K, 11K100	V_{CBO}	80 100	Vdc
Emitter Base Voltage	V_{EBO}	5	Vdc
Collector Current Continuous Peak	I_C	12 20	Adc
Base Current	I_B	0.2	Adc
Thermal Resistance	θ_{JC}	1.0	°C/Watt
Total Internal Power Dissipation @ $T_C = 50^\circ\text{C}^1$	P_D	150	Watts
Operating Junction and Storage Temperature	T_J T_{STG}	-65 to +200	°C

⁽¹⁾ For operation above $T_C = 50^\circ\text{C}$, derate @ 1.0 W/°C.

DEVICE SELECTION GUIDE

DEVICE	VOLTAGE RATING	POLARITY
PMD10K80	80V	NPN
PMD10K100	100V	NPN
PMD11K80	80V	PNP
PMD11K100	100V	PNP

Excellent thermal resistance junction to case (θ_{JC}) provides for more useable power at lower operating temperatures. This, coupled with 100% I_{SB} testing, insures optimum performance and durability for DC motor control and other complementary Darlington applications. These Darlington devices are hermetically sealed steel TO-3 packages providing high reliability and low thermal resistance.

PMD 10K, 11K SERIES

ELECTRICAL CHARACTERISTICS

All parameters are guaranteed at $T_J = 0$ to 200°C , unless otherwise specified.

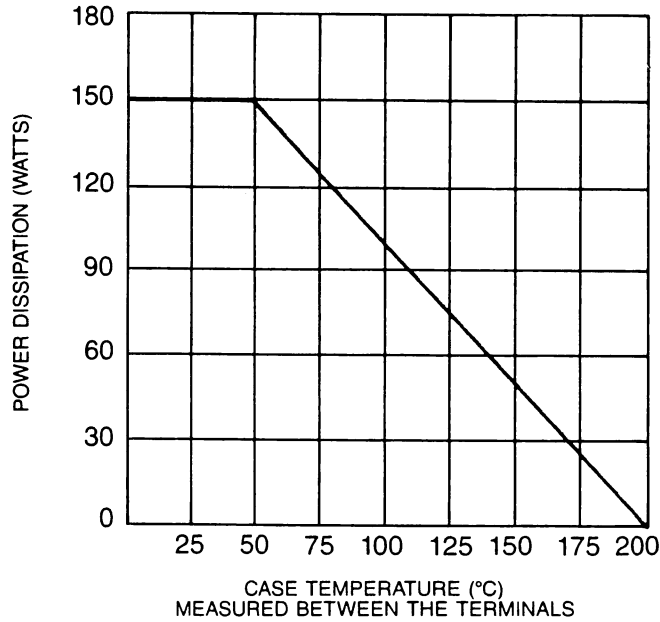
Parameter	Symbol	Test Conditions	Minimum	Maximum	Units
ON CHARACTERISTICS					
Collector Emitter Saturation Voltage ¹	$V_{CE(sat)}$	$I_C = 6 \text{ Adc}; I_B = 24 \text{ mAdc}$		2.0	Vdc
Base Emitter Turn-on Voltage ¹	$V_{BE(on)}$	$I_C = 6 \text{ Adc}; V_{CE} = 3 \text{ Vdc}$		2.8	Vdc
Base Emitter Saturation ¹	$V_{BE(sat)}$	$I_C = 6 \text{ Adc}; I_B = 24 \text{ mAdc}$		2.8	Vdc
DC Current Gain ¹ PMD10K80, 100 PMD11K80, 100	h_{FE}	$I_C = 6 \text{ Adc}; V_{CE} = 3 \text{ Vdc}$ $T_J = 25^\circ\text{C}$	1000 800	20,000 20,000	
OFF CHARACTERISTICS					
Forward Bias Secondary Breakdown Current	$I_{s/b}$	$V_{CE} = 30 \text{ Vdc}; T_A = 25^\circ\text{C}$ 1 sec non-repetitive pulse	5.0		Adc
Collector Emitter Breakdown Voltage ¹ (Base Open) PMD10K, 11K80 PMD10K, 11K100	$V_{(BR)CEO}$	$I_{CE} = 100 \text{ mAdc}; T_J = 25^\circ\text{C}$	80 100		Vdc
Collector Emitter Sustaining Voltage ¹ PMD10K, 11K80 PMD10K, 11K100	$V_{(BR)CEO}$	$I_{CE} = 100 \text{ mAdc}; R_{BE} = 2.2\text{k}\Omega$	80 100		Vdc
Emitter Base Leakage Current	I_{EBO}	$V_{EB} = 5 \text{ Vdc}; I_C = 0\text{A}$	3.0		mAdc
Collector Emitter Leakage Current PMD10K, 11K80 PMD10K, 11K100	I_{CER}	$V_{CE} = 54 \text{ Vdc}; R_{BE} = 2.2\text{k}\Omega$ $V_{CE} = 67 \text{ Vdc}; R_{BE} = 2.2\text{k}\Omega$		5.0 5.0	mAdc
DYNAMIC CHARACTERISTICS					
Output Capacitance	C_{ob}	$V_{CB} = 10 \text{ Vdc}; I_E = 0 \text{ Adc}$ $f = 1 \text{ MHz}; T_J = 25^\circ\text{C}$		300	pF
Small Signal Current Gain	h_{fe}	$I_C = 5 \text{ Adc}; V_{CE} = 3 \text{ Vdc}$ $f = 1 \text{ kHz}; T_J = 25^\circ\text{C}$	300		
Common Emitter Short Circuit Forward Transfer Ratio	h_{fe}	$I_C = 5 \text{ Adc}; V_{CE} = 3 \text{ Vdc}$ $f = 1 \text{ MHz}; T_J = 25^\circ\text{C}$	4		

(1) Pulse tested with pulse width $\leq 300 \mu\text{s}$ and duty cycle $\leq 2.0\%$.

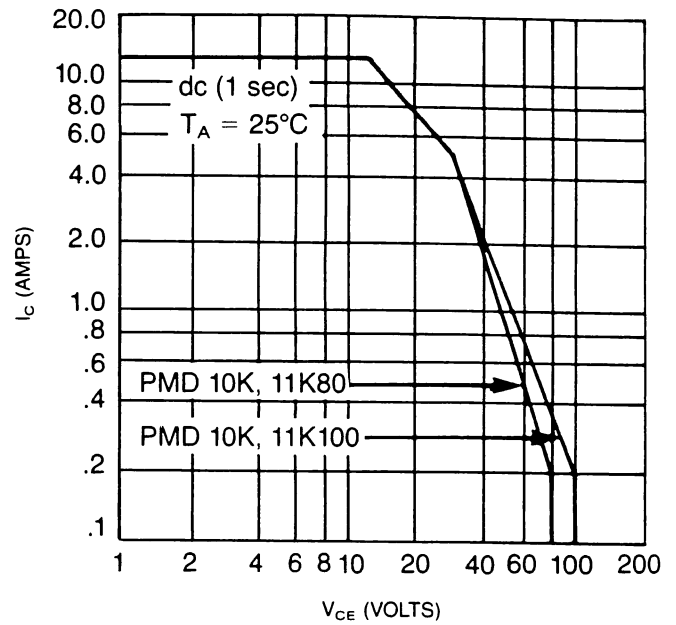
PMD 10K, 11K SERIES

OPERATIONAL DATA

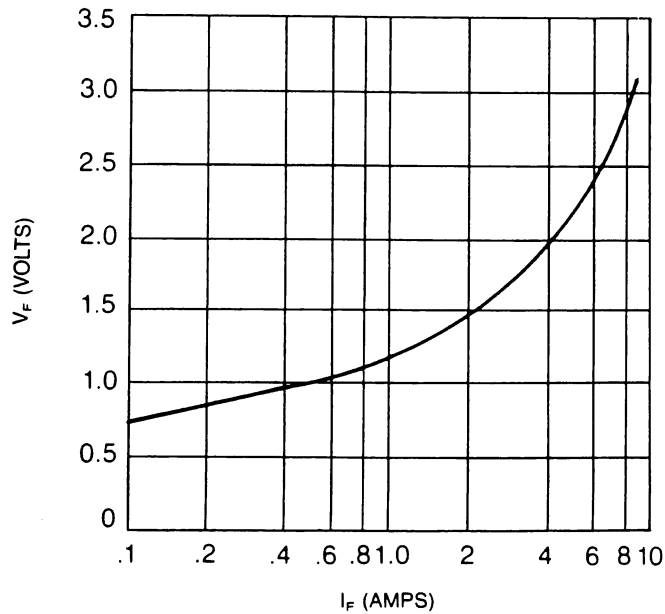
**POWER DERATING
(PMD 10K, 11K SERIES)**



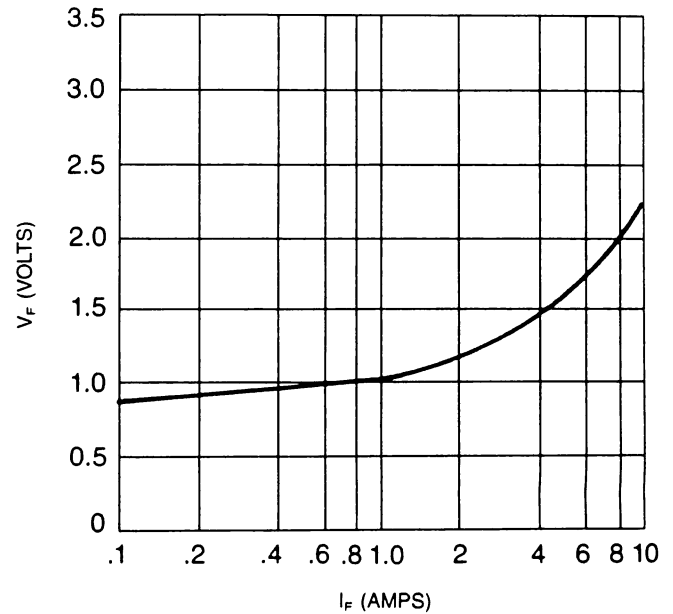
**SAFE OPERATING AREA
(PMD 10K, 11K SERIES)**



**FORWARD VOLTAGE OF D1
(PMD 10K SERIES)**



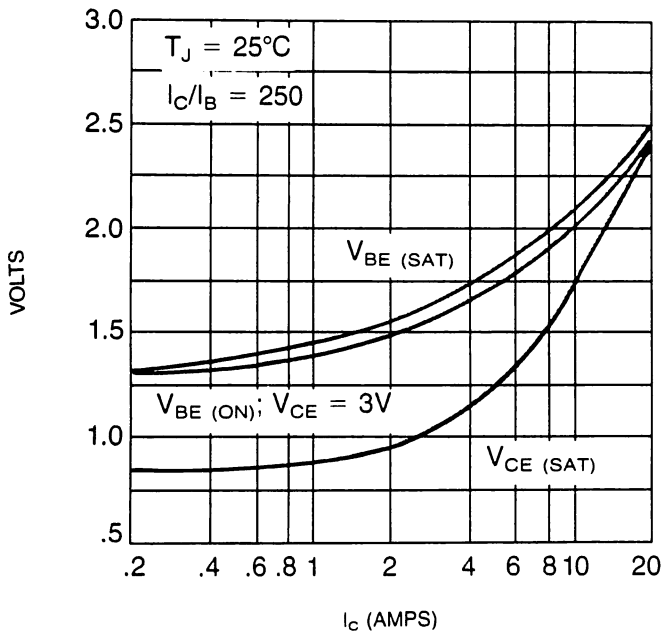
**FORWARD VOLTAGE OF D1
(PMD 11K SERIES)**



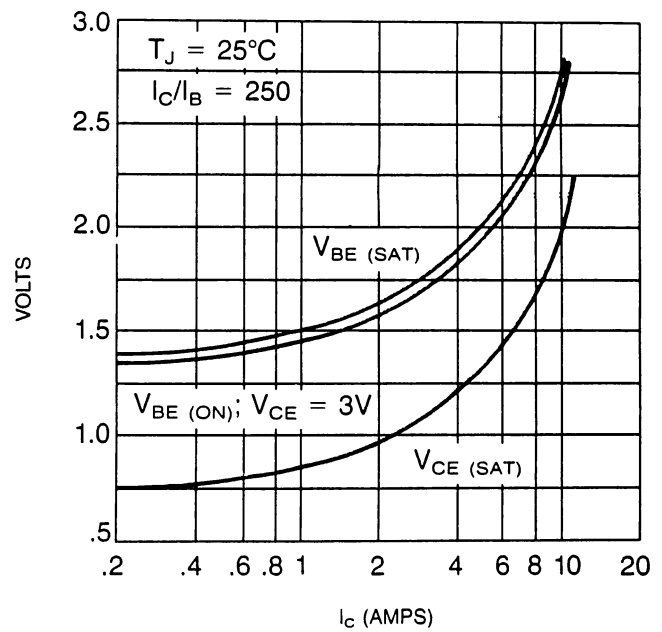
PMD 10K, 11K SERIES

OPERATIONAL DATA

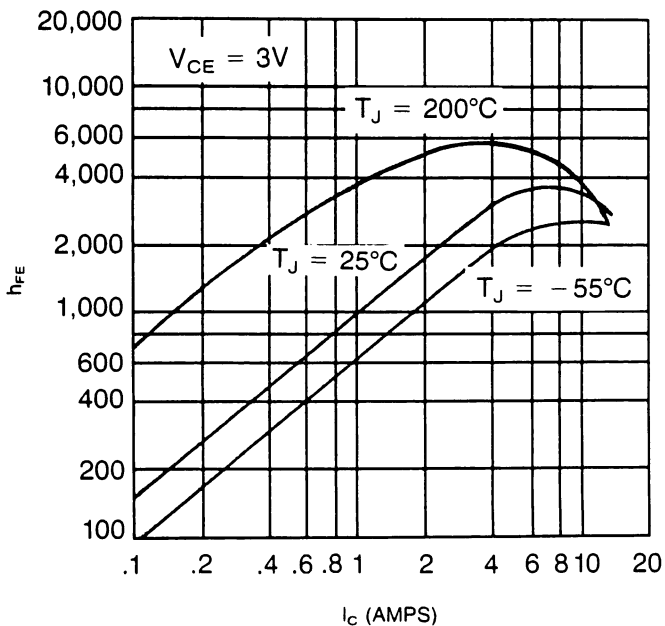
ON VOLTAGE VS
COLLECTOR CURRENT
(PMD 10K SERIES)



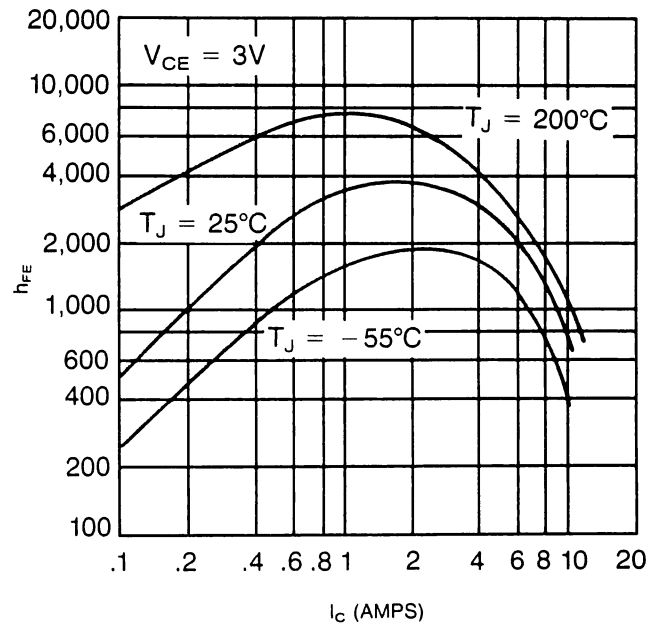
ON VOLTAGE VS
COLLECTOR CURRENT
(PMD 11K SERIES)



DC COLLECTOR CURRENT GAIN
VS COLLECTOR CURRENT
(PMD 10K SERIES)

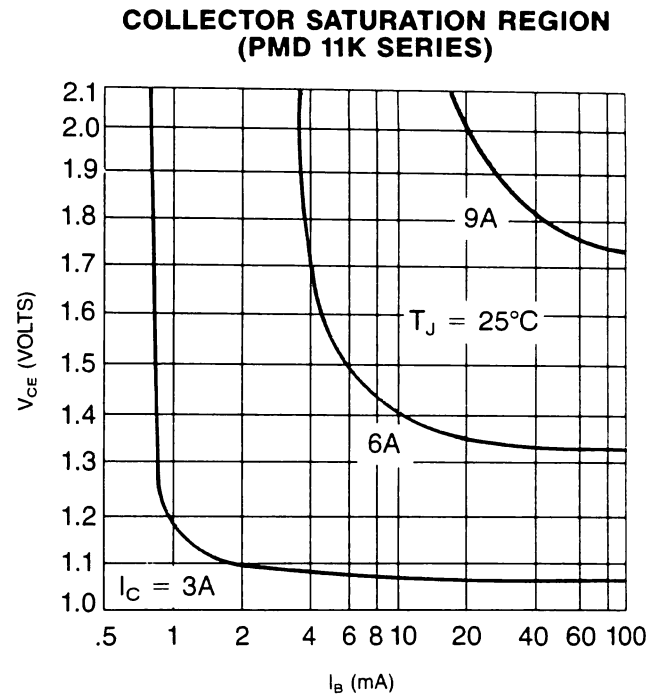
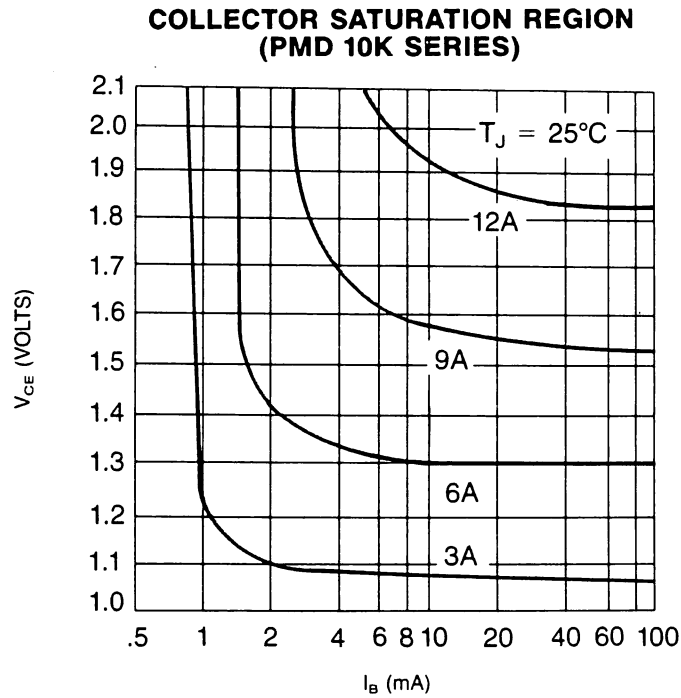


DC COLLECTOR CURRENT GAIN
VS COLLECTOR CURRENT
(PMD 11K SERIES)



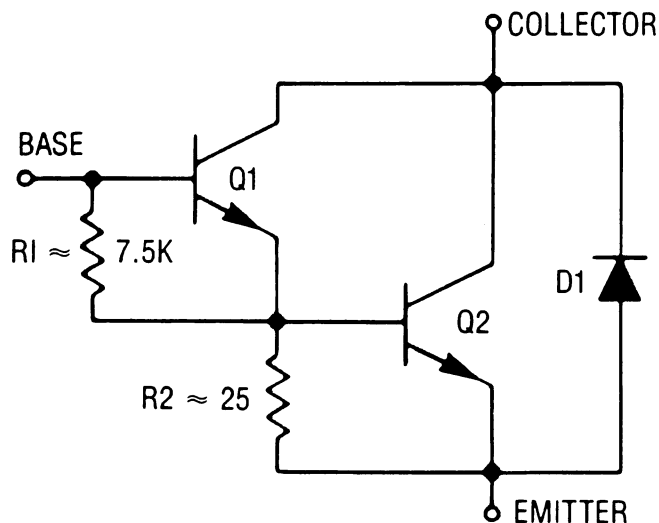
PMD 10K, 11K SERIES

OPERATIONAL DATA

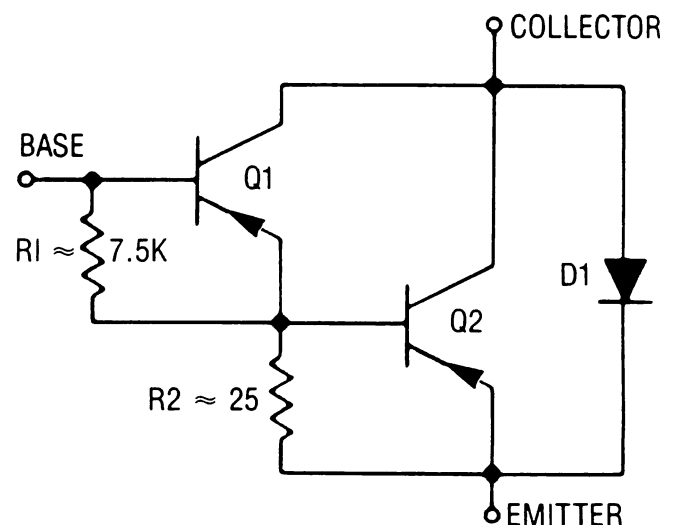


BLOCK DIAGRAMS

NPN

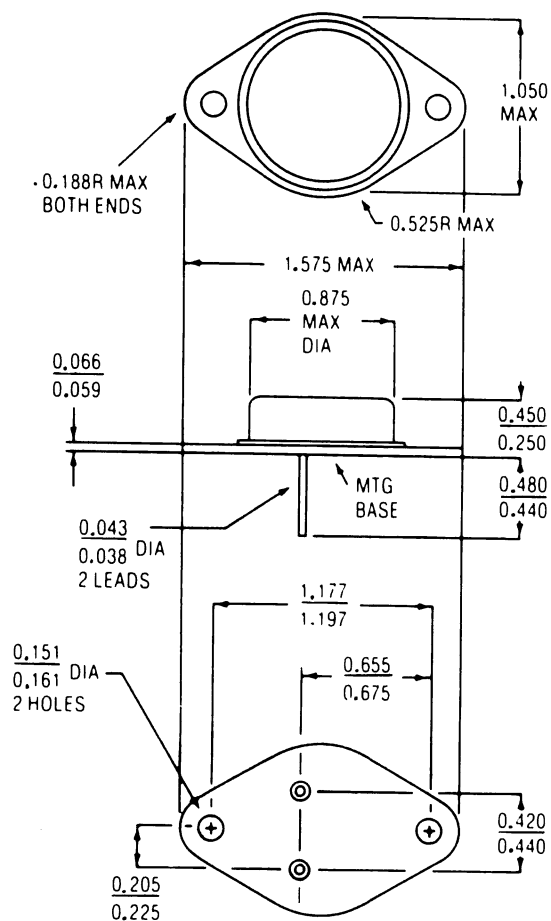


PNP

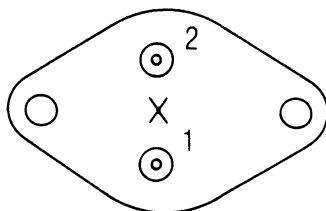


PMD 10K, 11K SERIES

DEVICE OUTLINE



Bottom View



1 - Base
2 - Emitter
Case is Collector