

NTP75N06, NTB75N06

Power MOSFET

75 Amps, 60 Volts, N-Channel TO-220 and D²PAK

Designed for low voltage, high speed switching applications in power supplies, converters and power motor controls and bridge circuits.

Features

- Pb-Free Packages are Available

Typical Applications

- Power Supplies
- Converters
- Power Motor Controls
- Bridge Circuits

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	60	Vdc
Drain-to-Gate Voltage (R _{GS} = 10 MΩ)	V _{DGR}	60	Vdc
Gate-to-Source Voltage	V _{GS}	± 20	Vdc
– Continuous	V _{GS}	± 30	Vdc
– Non-Repetitive (t _p ≤ 10 ms)			
Drain Current	I _D	75	A dc
– Continuous @ T _A = 25°C	I _D	50	A dc
– Continuous @ T _A = 100°C	I _{DM}	225	A pk
– Single Pulse (t _p ≤ 10 μs)			
Total Power Dissipation @ T _A = 25°C	P _D	214	W
Derate above 25°C		1.4	W/°C
Total Power Dissipation @ T _A = 25°C		2.4	W
Operating and Storage Temperature Range	T _J , T _{stg}	–55 to +175	°C
Single Pulse Drain-to-Source Avalanche Energy – Starting T _J = 25°C (V _{DD} = 50 Vdc, V _{GS} = 10 Vdc, L = 0.3 mH I _{L(pk)} = 75 A, V _{DS} = 60 Vdc)	E _{AS}	844	mJ
Thermal Resistance	R _{θJC}	0.7	°C/W
– Junction-to-Case	R _{θJA}	62.5	°C/W
– Junction-to-Ambient			
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	T _L	260	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

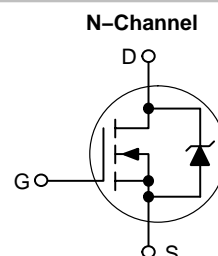


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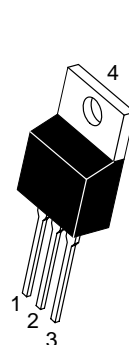
<http://onsemi.com>

75 AMPERES, 60 VOLTS

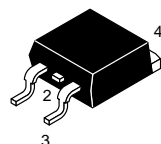
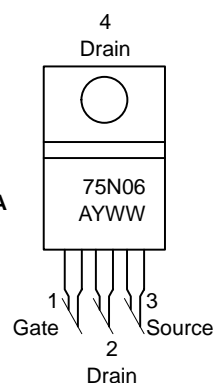
R_{DS(on)} = 9.5 mΩ



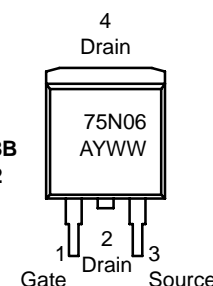
MARKING DIAGRAMS



TO-220
CASE 221A
STYLE 5



D²PAK
CASE 418B
STYLE 2



75N06 = Device Code
A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

Symbol	Min	Typ	Max	Unit
$V_{(BR)DSS}$	60	71	–	Vdc
	–	73	–	mV/°C
I_{DSS}	–	–	10	μA _{dc}
	–	–	100	
I_{GSS}	–	–	±100	nA _{dc}

$V_{GS(th)}$	2.0	2.8	4.0	Vdc
	–	8.0	–	mV/°C
$R_{DS(on)}$	–	8.2	9.5	mΩ
$V_{DS(on)}$	–	0.72	0.86	Vdc
	–	0.63	–	
g_{FS}	–	40.2	–	mhos

C_{iss}	–	3220	4510	pF
C_{oss}	–	1020	1430	
C_{rss}	–	234	330	

$t_{d(on)}$	–	16	25	ns
t_r	–	112	155	
$t_{d(off)}$	–	90	125	
t_f	–	100	140	
Q_T	–	92	130	nC

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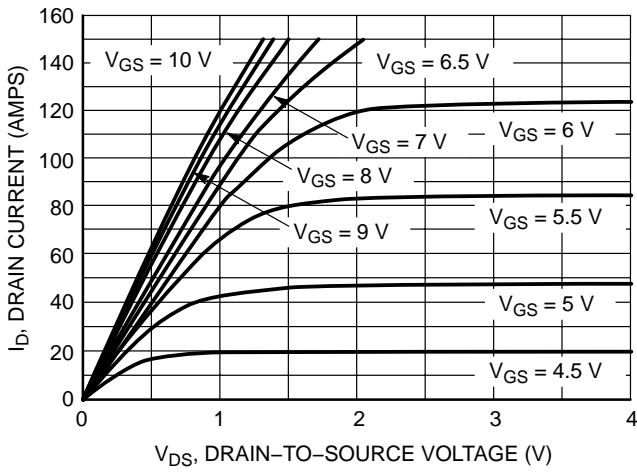


Figure 1. On-Region Characteristics

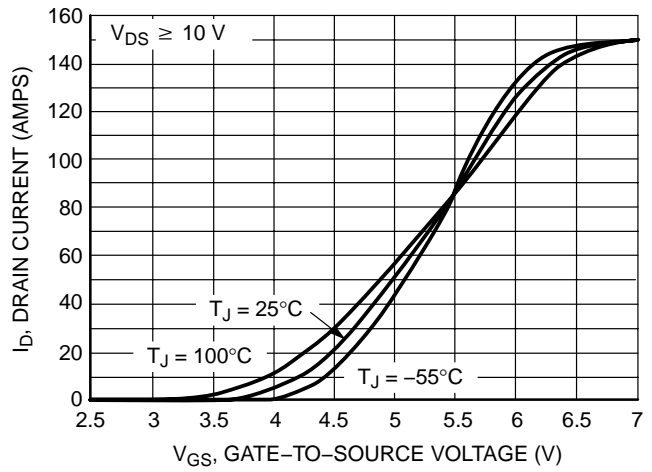


Figure 2. Transfer Characteristics

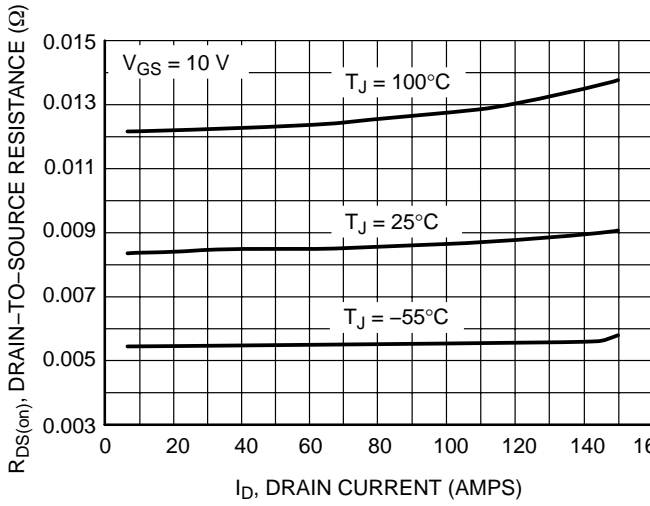


Figure 3. On-Resistance vs. Gate-to-Source Voltage

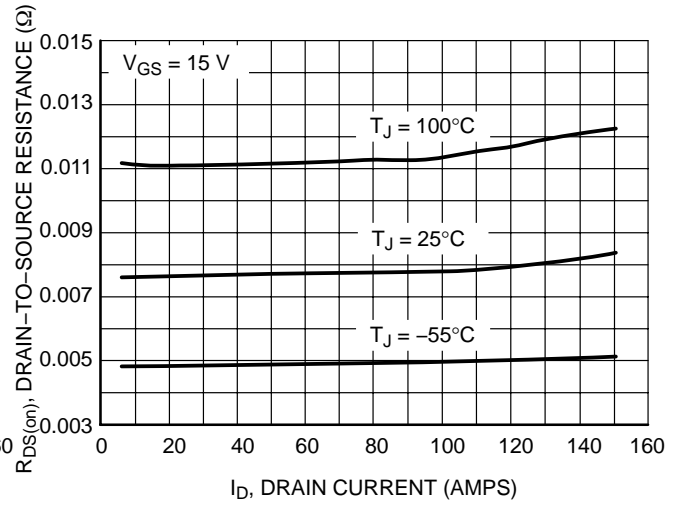


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

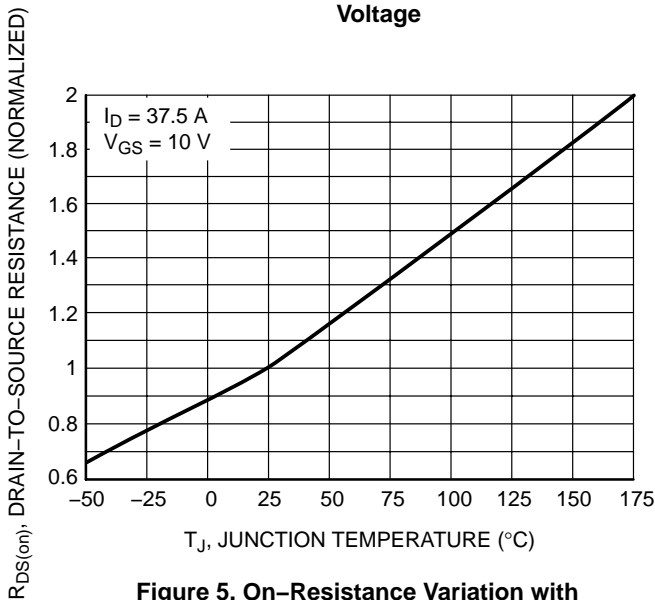


Figure 5. On-Resistance Variation with Temperature

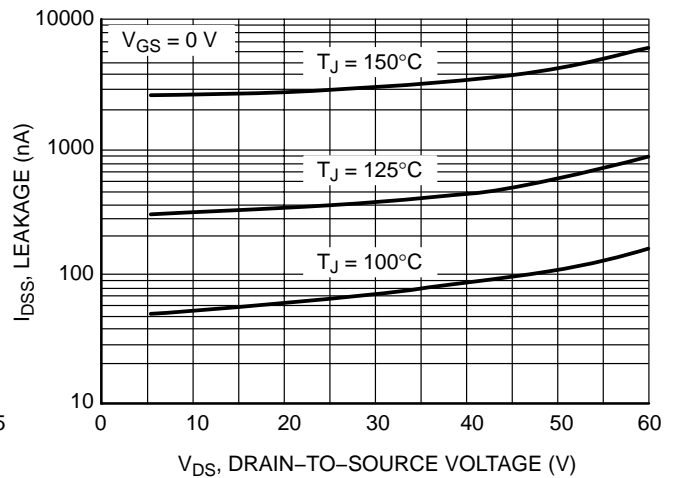
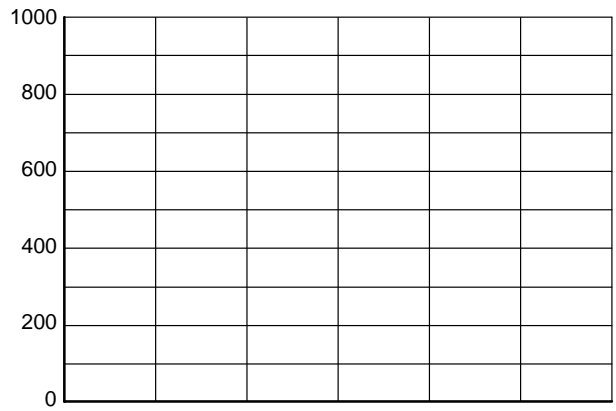
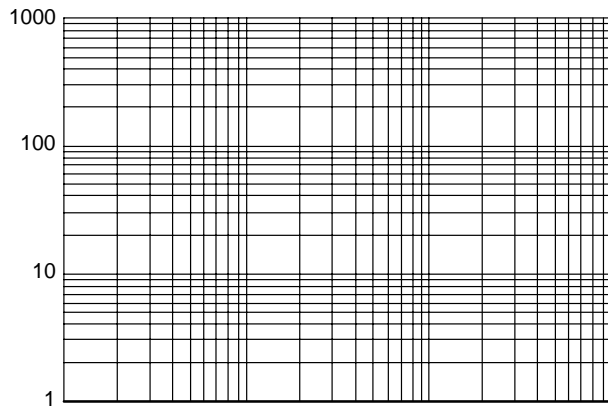
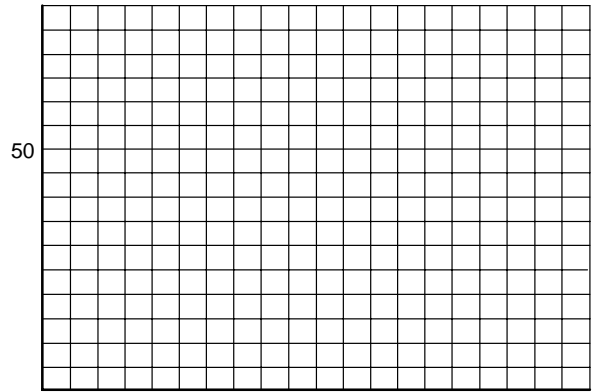
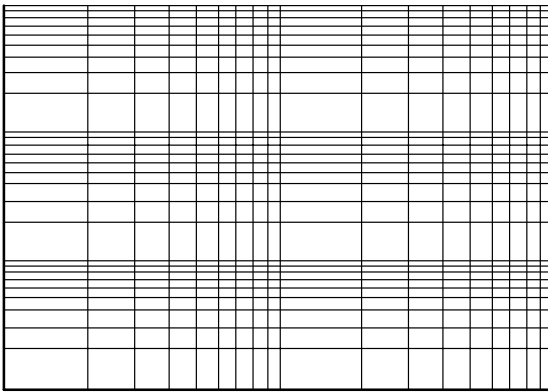
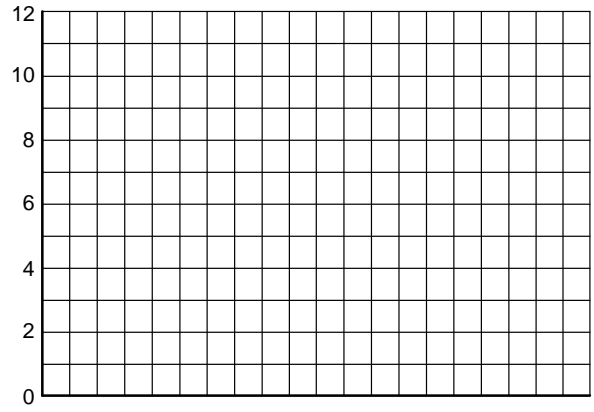
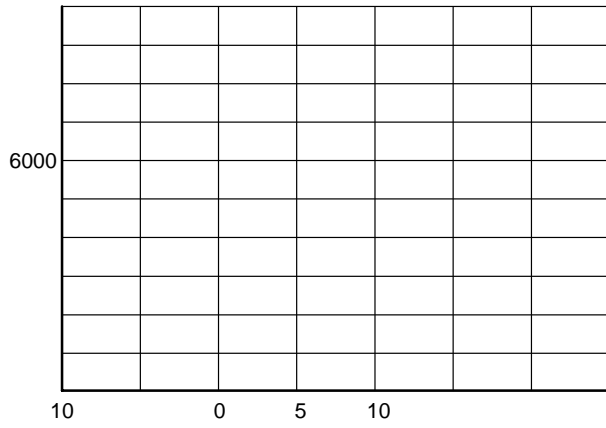


Figure 6. Drain-to-Source Leakage Current vs. Voltage

NTP75N06, NTB75N06



NTP75N06, NTB75N06

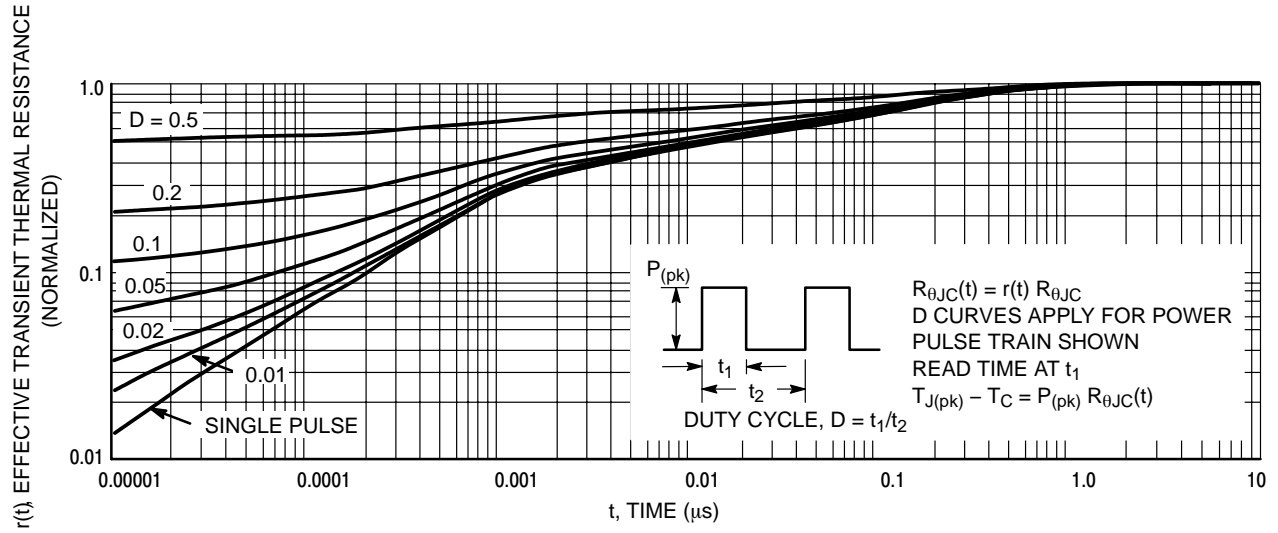


Figure 13. Thermal Response

ORDERING INFORMATION

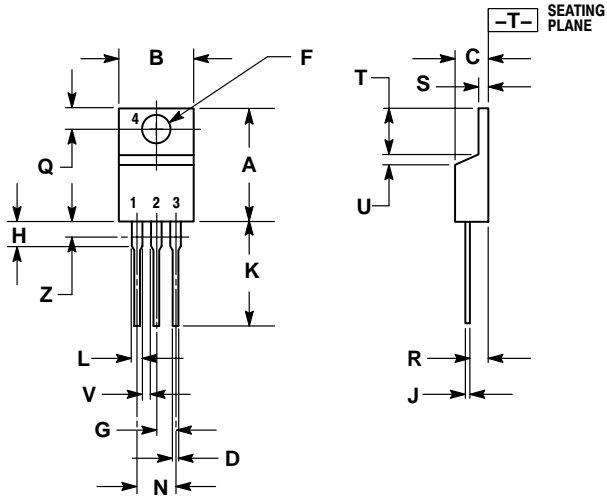
Device	Package	Shipping†
NTP75N06	TO-220	50 Units/Rail
NTP75N06G	TO-220 (Pb-Free)	50 Units/Rail
NTB75N06	D ² PAK	50 Units/Rail
NTB75N06G	D ² PAK (Pb-Free)	50 Units/Rail
NTB75N06T4	D ² PAK	800 Tape & Reel
NTB75N06T4G	D ² PAK (Pb-Free)	800 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

NTP75N06, NTB75N06

PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AA



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

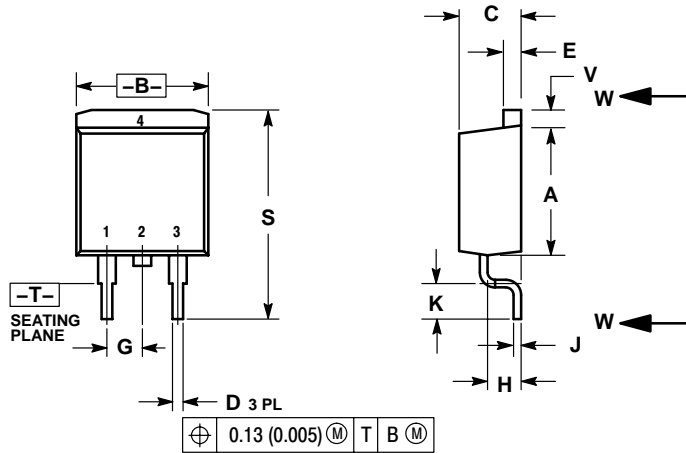
STYLE 5:

- PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

NTP75N06, NTB75N06

PACKAGE DIMENSIONS

D²PAK
CASE 418B-04
ISSUE J



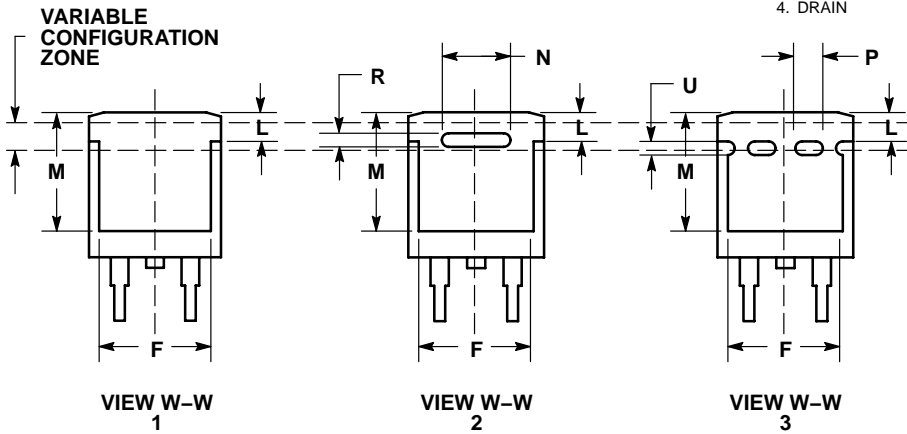
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

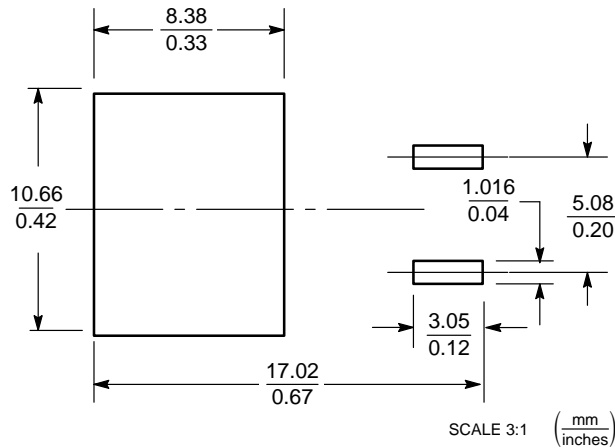
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
F	0.310	0.350	7.87	8.89
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
M	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
P	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40

STYLE 2:

- PIN 1. GATE
- DRAIN
- SOURCE
- DRAIN



SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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