

Switch-mode Schottky Power Rectifier

Surface Mount Power Package

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

This series of Power Rectifiers employs the Schottky Barrier principle in a large metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for use in low voltage, high frequency switching power supplies, free wheeling diodes, and polarity protection diodes.

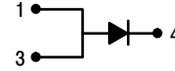
Features

- Guardring for Stress Protection
- Low Forward Voltage
- 175 °C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Short Heat Sink Tab Manufactured-Not Sheared!
- SBRB and SBRD8 Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

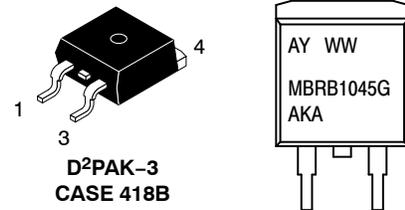
Mechanical Characteristics:

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.7 grams for D²PAK (approximately)
0.4 grams for DPAK (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260 °C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Ratings:
 - ◆ Machine Model = C (> 400 V)
 - ◆ Human Body Model = 3B (> 8000 V)

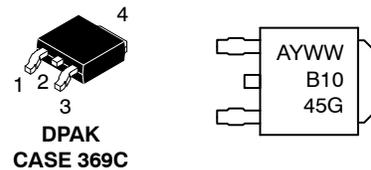
SCHOTTKY BARRIER RECTIFIER 10 AMPERES, 45 VOLTS



MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
MBRB1045 = Device Code
G = Pb-Free Package
AKA = Diode Polarity



A = Assembly Location
Y = Year
WW = Work Week
B1045 = Device Code
G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	45	V
Average Rectified Forward Current, $T_C = 135\text{ }^\circ\text{C}$	$I_{F(AV)}$	10	A
Peak Repetitive Forward Current (Square Wave, Duty = 0.5) $T_C = 135\text{ }^\circ\text{C}$	I_{FRM}	20	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	150 (MBRB/SBRB) 70 (MBRD/SBRD)	A
Operating Junction and Storage Temperature Range (Note 1)	T_J, T_{stg}	-65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	10000	$\text{V}/\mu\text{s}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, (MBRB1045G) Junction-to-Case (Note 2) Junction-to-Ambient (Note 2)	$R_{\theta JC}$ $R_{\theta JA}$	1.0 50	$^\circ\text{C}/\text{W}$
(MBRD1045G) Junction-to-Case (Note 2) Junction-to-Ambient (Note 2)	$R_{\theta JC}$ $R_{\theta JA}$	2.43 68	

2. When mounted using minimum recommended pad size on FR-4 board.

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3) ($I_F = 10\text{ Amps}, T_J = 125\text{ }^\circ\text{C}$) ($I_F = 20\text{ Amps}, T_J = 125\text{ }^\circ\text{C}$) ($I_F = 20\text{ Amps}, T_J = 25\text{ }^\circ\text{C}$)	V_F	0.57 0.72 0.84	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_J = 125\text{ }^\circ\text{C}$) (Rated dc Voltage, $T_J = 25\text{ }^\circ\text{C}$)	I_R	15 0.1	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

ORDERING INFORMATION

Device	Package	Shipping†
SBRB1045T4G	D ² PAK-3 (Pb-Free)	800 Units / Tape & Reel
MBRD1045T4G	DPAK (Pb-Free)	2,500 Units / Tape & Reel

DISCONTINUED (Note 4)

Device	Package	Shipping†
MBRB1045G	D ² PAK-3 (Pb-Free)	50 Units / Rail
SBRB1045G		50 Units / Rail
MBRB1045T4G		800 Units / Tape & Reel
MBRD1045G	DPAK (Pb-Free)	50 Units / Rail
SBRD81045T4G	DPAK (Pb-Free)	2,500 Units / Tape & Reel
SSBRD81045T4G		2,500 Units / 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.

4. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on www.onsemi.com.

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

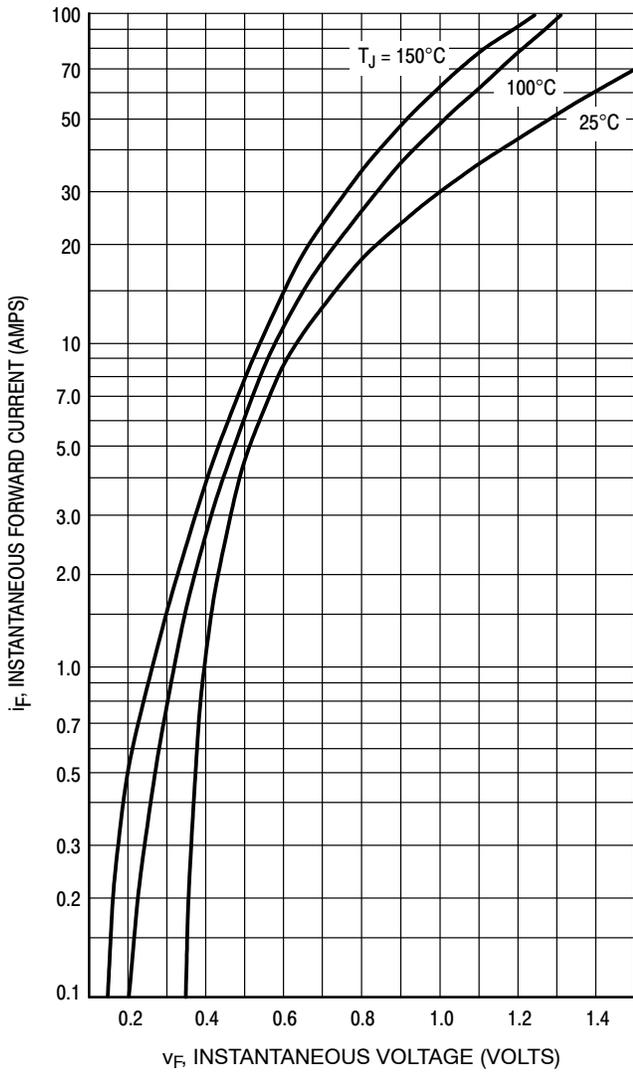


Figure 1. Maximum Forward Voltage

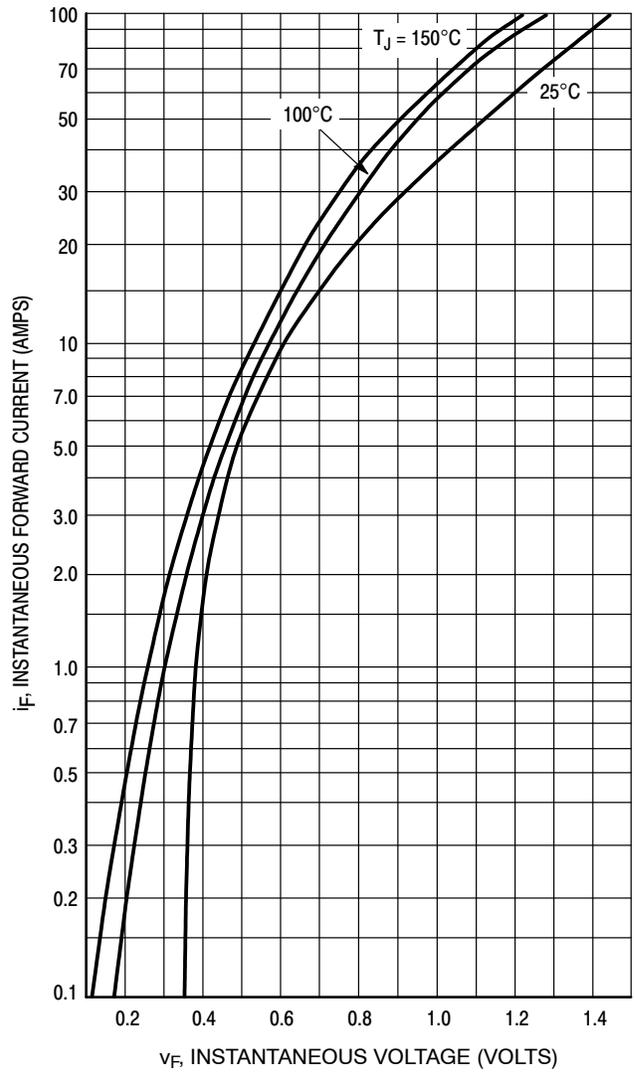


Figure 2. Typical Forward Voltage

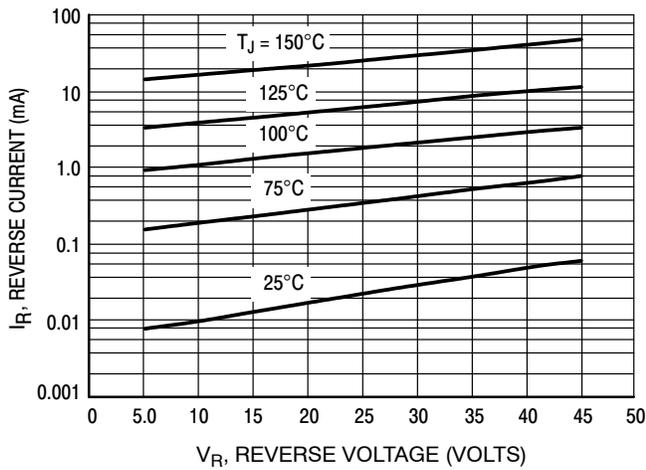


Figure 3. Maximum Reverse Current

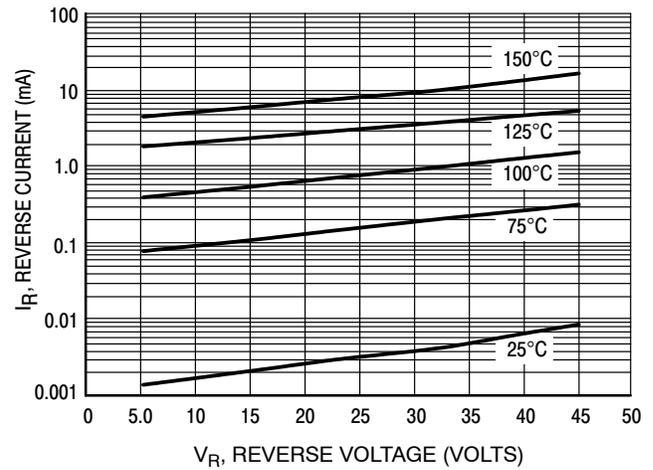


Figure 4. Typical Reverse Current

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

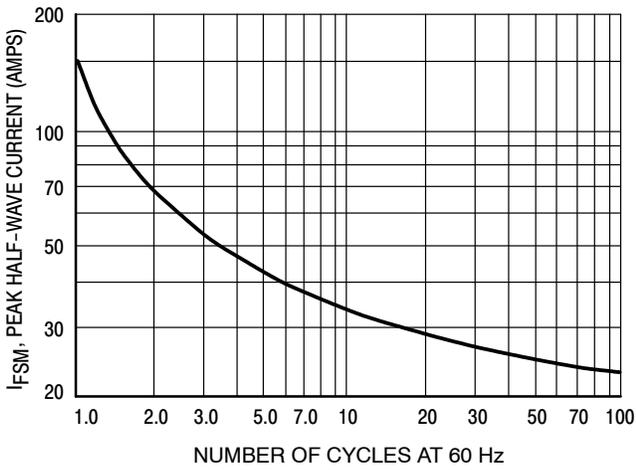


Figure 8. Maximum Surge Capability

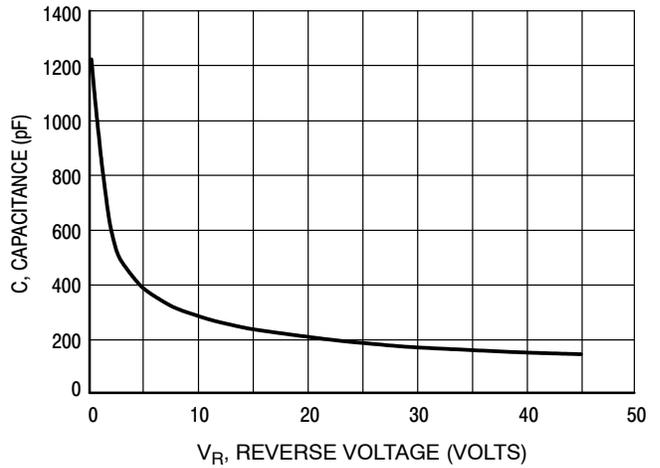
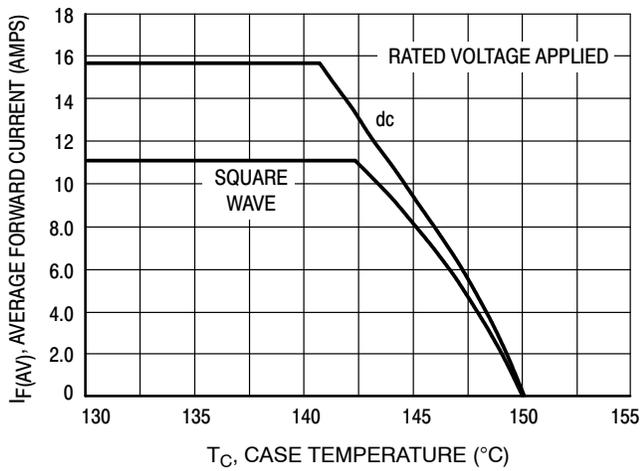


Figure 5. Typical Capacitance



**Figure 6. Current Derating, Case,
 $R_{\theta JC} = 1.0^{\circ}C/W$**

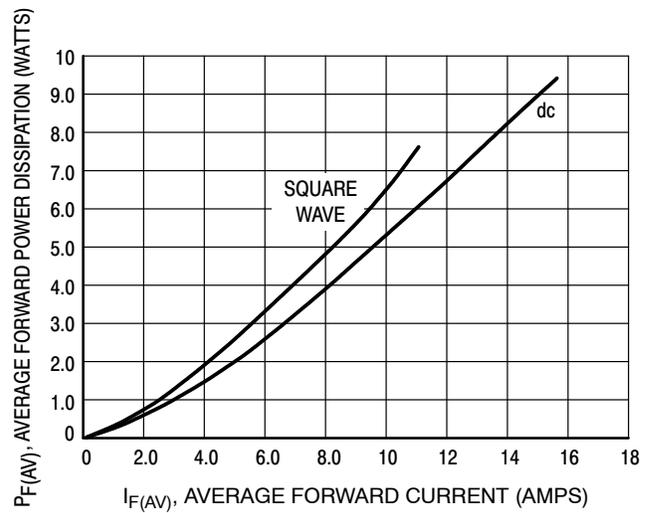
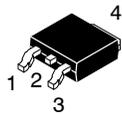


Figure 7. Forward Power Dissipation

MBRB1045G, MBRD1045G, SBRB1045G, SBRD81045T4G

REVISION HISTORY

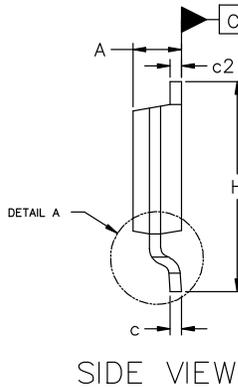
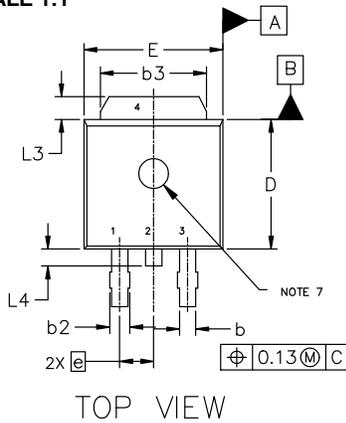
Revision	Description of Changes	Date
12	MBRB1045G, SBRB1045G, MBRB1045T4G, MBRD1045G, SBRD81045T4G, SS-BRD81045T4G OPN Marked as Discontinued + Rebranded the Data Sheet to onsemi format	7/1/2025



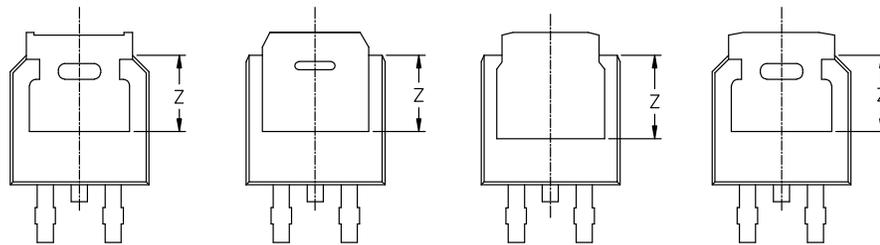
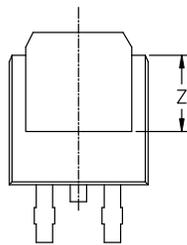
DPAK3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE J

DATE 12 AUG 2025

SCALE 1:1

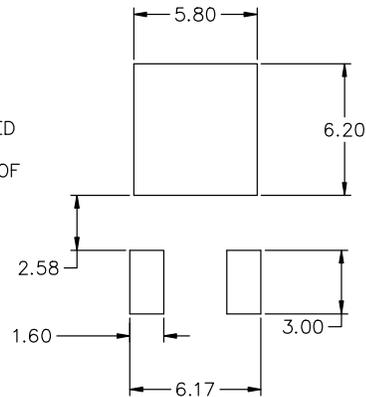
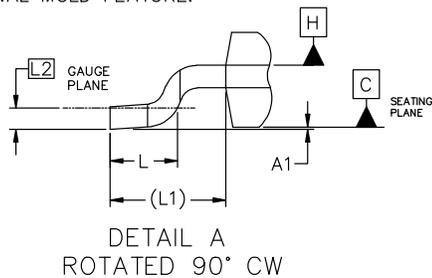


MILLIMETERS			
DIM	MIN	NOM	MAX
A	2.18	2.28	2.38
A1	0.00	---	0.13
b	0.63	0.76	0.89
b2	0.72	0.93	1.14
b3	4.57	5.02	5.46
c	0.46	0.54	0.61
c2	0.46	0.54	0.61
D	5.97	6.10	6.22
E	6.35	6.54	6.73
e	2.29 BSC		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L1	2.90 REF		
L2	0.51 BSC		
L3	0.89	---	1.27
L4	---	---	1.01
Z	3.93	---	---



NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15mm PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.



RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

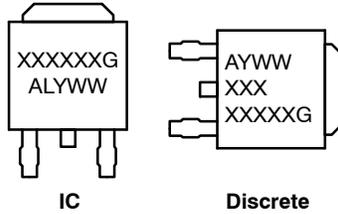
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DPAK3 6.10x6.54x2.28, 2.29P
CASE 369C
ISSUE J

DATE 12 AUG 2025

**GENERIC
MARKING DIAGRAM***



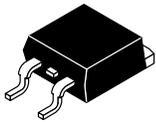
- XXXXXX = Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

- | | | | | |
|--|--|---|---|--|
| <p>STYLE 1:
 PIN 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR</p> | <p>STYLE 2:
 PIN 1. GATE
 2. DRAIN
 3. SOURCE
 4. DRAIN</p> | <p>STYLE 3:
 PIN 1. ANODE
 2. CATHODE
 3. ANODE
 4. CATHODE</p> | <p>STYLE 4:
 PIN 1. CATHODE
 2. ANODE
 3. GATE
 4. ANODE</p> | <p>STYLE 5:
 PIN 1. GATE
 2. ANODE
 3. CATHODE
 4. ANODE</p> |
| <p>STYLE 6:
 PIN 1. MT1
 2. MT2
 3. GATE
 4. MT2</p> | <p>STYLE 7:
 PIN 1. GATE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR</p> | <p>STYLE 8:
 PIN 1. N/C
 2. CATHODE
 3. ANODE
 4. CATHODE</p> | <p>STYLE 9:
 PIN 1. ANODE
 2. CATHODE
 3. RESISTOR ADJUST
 4. CATHODE</p> | <p>STYLE 10:
 PIN 1. CATHODE
 2. ANODE
 3. CATHODE
 4. ANODE</p> |

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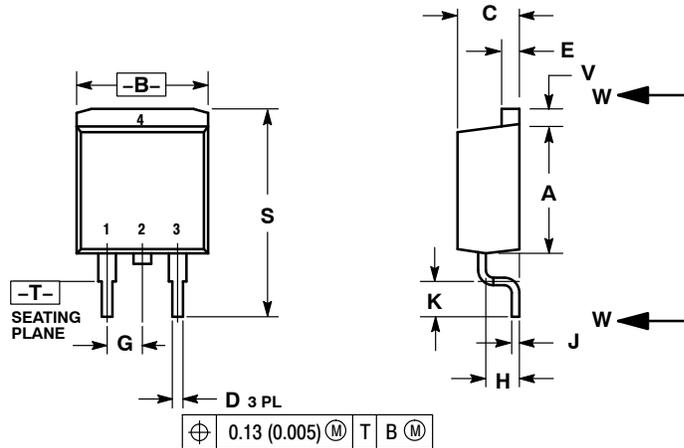
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D²PAK 3
CASE 418B-04
ISSUE L

DATE 17 FEB 2015

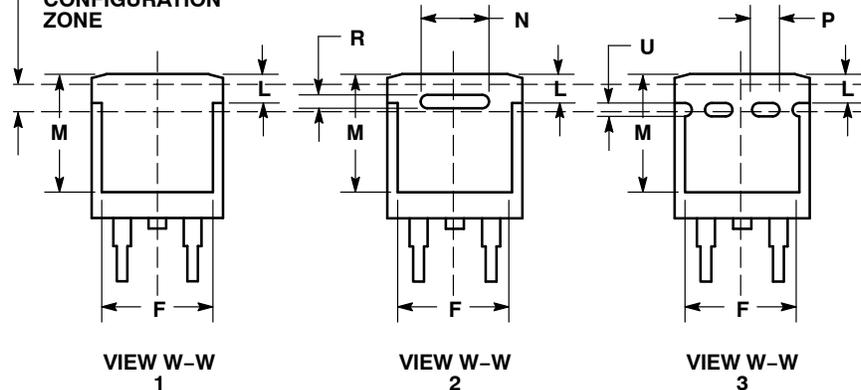
SCALE 1:1



- 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

VARIABLE CONFIGURATION ZONE



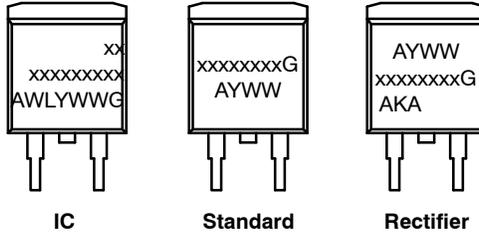
- | | | | | | |
|---|--|--|---|--|---|
| STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR | STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN | STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE | STYLE 4:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR | STYLE 5:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE | STYLE 6:
PIN 1. NO CONNECT
2. CATHODE
3. ANODE
4. CATHODE |
|---|--|--|---|--|---|

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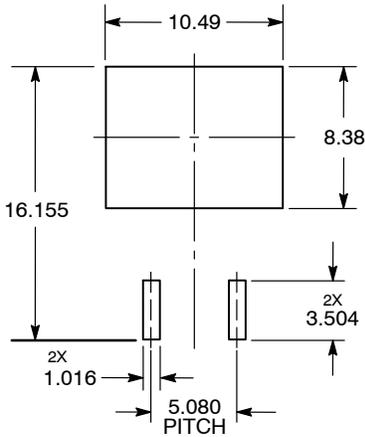
**GENERIC
MARKING DIAGRAM***



- xx = Specific Device Code
- A = Assembly Location
- WL = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package
- AKA = Polarity Indicator

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

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

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