



**MBR30...CT**  
**MBRB30...CT**  
**MBR30...CT-1**

**SCHOTTKY RECTIFIER**

**30 Amp**

$I_{F(AV)} = 30\text{Amp}$   
 $V_R = 30 - 45\text{V}$

**Major Ratings and Characteristics**




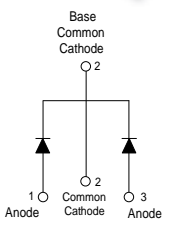
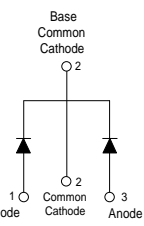
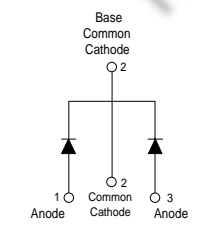
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
$I_{FRM}$ @ $T_C = 123^\circ\text{C}$ (PerLeg)	30	A
$V_{RRM}$	35-45	V
$I_{FSM}$ @ tp = 5 $\mu\text{s}$ sine	1020	A
$V_F$ @ 20Apk, $T_J = 125^\circ\text{C}$	0.6	V
$T_J$ range	-65 to 150	$^\circ\text{C}$

**Description/ Features**

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C  $T_J$  operation
- Center tap TO-220, D<sup>2</sup>Pak and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

**Case Styles**

MBR30..CT	MBR30.. S	MBR30.. -1
		
<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>TO-220</b></p>	<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>D<sup>2</sup>PAK</b></p>	<p>Base Common Cathode</p>  <p>1 Anode    2 Common Cathode    3 Anode</p> <p><b>TO-262</b></p>

### Voltage Ratings

Parameters	MBR3035CT MBRB3035CT MBR3035CT-1	MBR3045CT MBRB3045CT MBR3045CT-1
$V_R$ Max. DC Reverse Voltage (V)	35	45
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)		

### Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) (Per Device)	15	A	@ $T_C = 123^\circ\text{C}$ , (Rated $V_R$ )
	30		
$I_{FRM}$ Peak Repetitive Forward Current (Per Leg)	30	A	Rated $V_R$ , square wave, 20kHz $T_C = 123^\circ\text{C}$
$I_{FSM}$ Non Repetitive Peak Surge Current	1020	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse Following any rated load condition and with rated $V_{RRM}$ applied Surge applied at rated load conditions halfwave, single phase, 60Hz
	200		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2\text{Amps}$ , $L = 5\text{mH}$
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ , max. $V_A = 1.5 \times V_R$ typical

### Electrical Specifications

Parameters	Values	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1)	0.76	V	@ 30A $T_J = 25^\circ\text{C}$
	0.6	V	@ 20A $T_J = 125^\circ\text{C}$
	0.72	V	@ 30A $T_J = 125^\circ\text{C}$
$I_{RM}$ Max. Instantaneous Reverse Current (1)	1	mA	$T_J = 25^\circ\text{C}$ Rated DC voltage
	100	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.29	V	$T_J = T_J \text{ max.}$
$r_t$ Forward Slope Resistance	13.6	m $\Omega$	
$C_T$ Max. Junction Capacitance	800	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change	10000	V/ $\mu\text{s}$	(Rated $V_R$ )

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

### Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
$T_J$ Max. Junction Temperature Range	-65 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-65 to 175	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	1.5	$^\circ\text{C/W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C/W}$	Mounting surface, smooth and greased Only for TO-220
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	50	$^\circ\text{C/W}$	DC operation For D <sup>2</sup> Pak and TO-262
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 12 (10)		

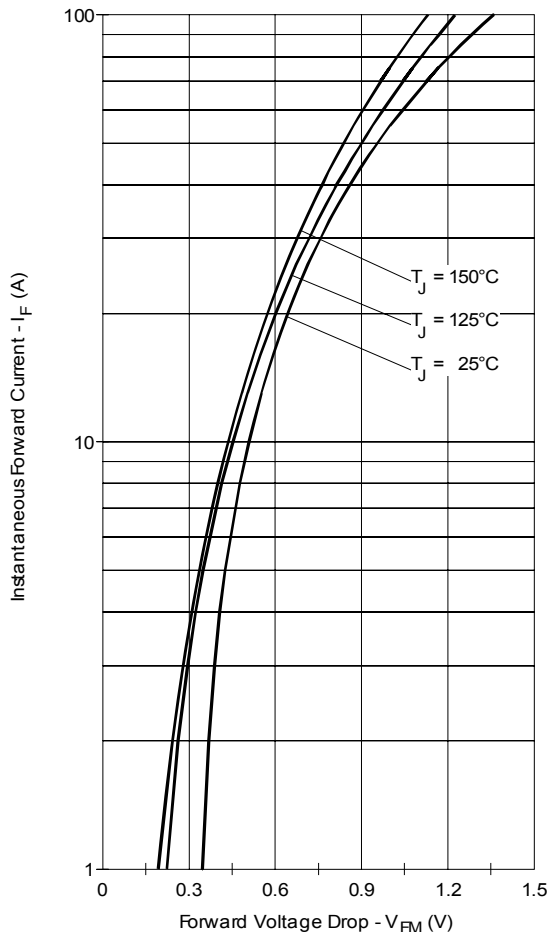


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

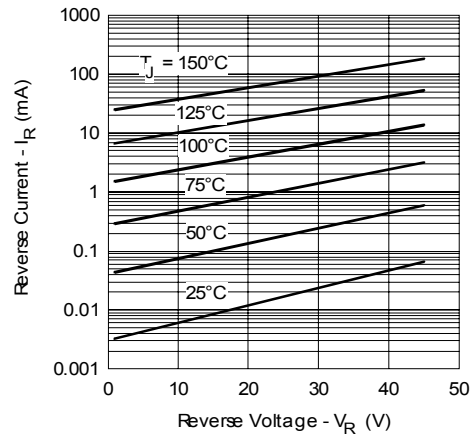


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

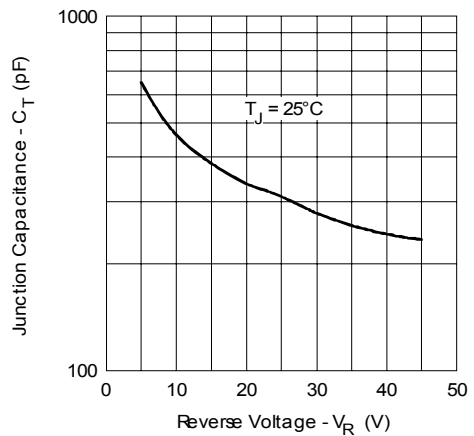


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

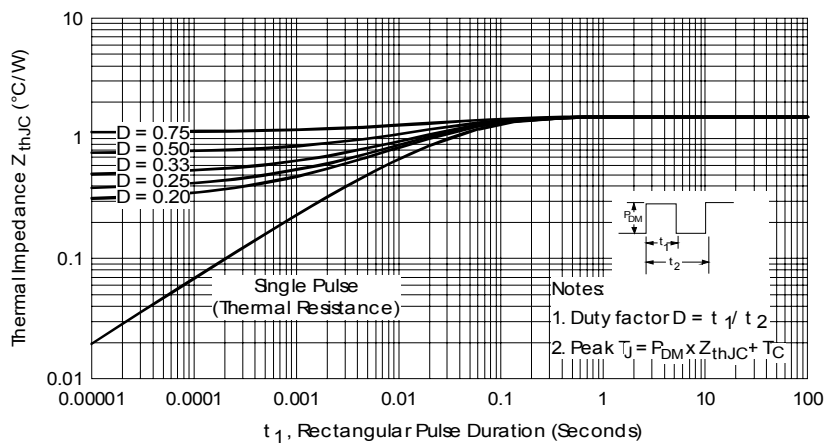


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

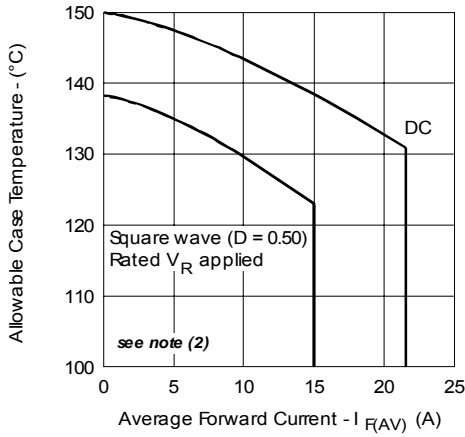


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

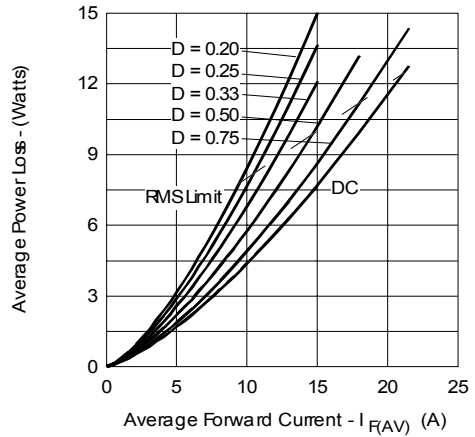


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

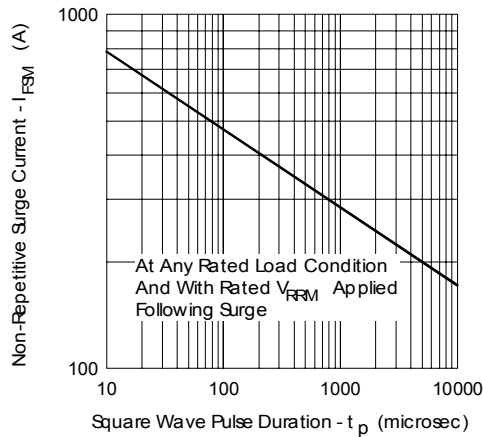


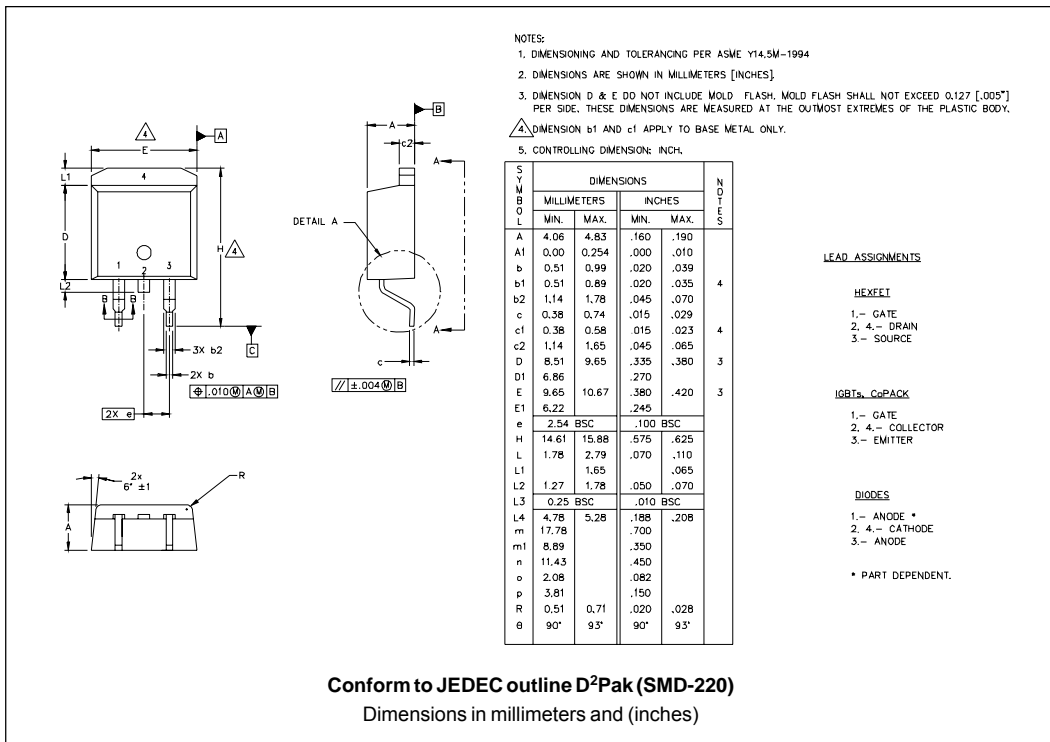
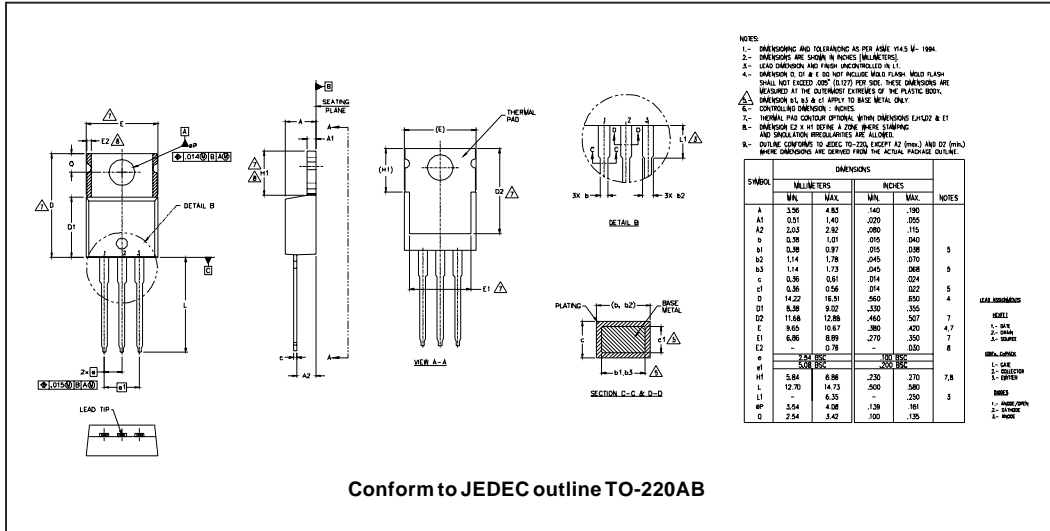
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(2) Formula used:  $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$

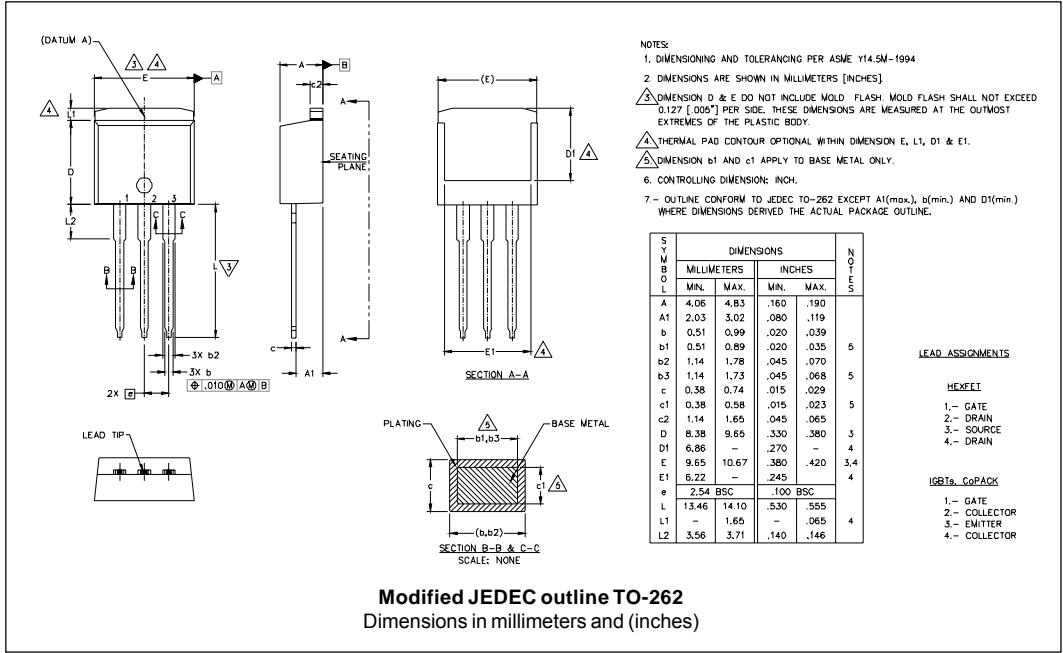
$Pd$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

$Pd_{REV}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1}$  = rated  $V_R$

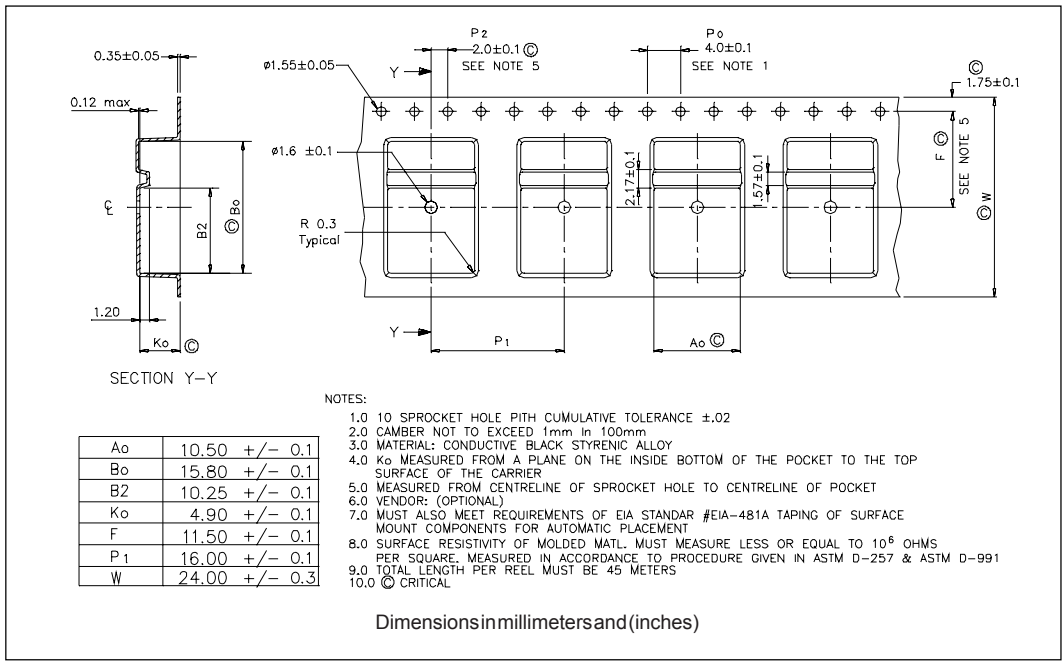
Outline Table



Outline Table



Tape & Reel Information



Part Marking Information

<p>TO-220</p>	<p>EXAMPLE: THIS IS A MBR3045CT          LOT CODE 1789          ASSEMBLED ON WW 19, 2000          IN THE ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE</p> <p>YEAR 0 = 2000          WEEK 19          LINE C</p>
<p>D<sup>2</sup>PAK</p>	<p>EXAMPLE: THIS IS A MBRB3030CT          LOT CODE 8024          ASSEMBLED ON WW 02, 2003          IN ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE</p> <p>YEAR 3 = 2003          WEEK 02          LINE C</p>
<p>TO-262</p>	<p>EXAMPLE: THIS IS A MBR3030CT-1          LOT CODE 1789          ASSEMBLED ON WW 19, 2002          IN ASSEMBLY LINE "C"</p>	<p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE</p> <p>YEAR 2 = 2002          WEEK 19          LINE C</p>

Ordering Information Table

Device Code																	
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">MBR</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">30</td> <td style="padding: 5px;">45</td> <td style="padding: 5px;">CT</td> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">TRL</td> <td style="padding: 5px;">-</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> <td style="text-align: center;">⑦</td> <td style="text-align: center;">⑧</td> </tr> </table>	MBR	B	30	45	CT	-1	TRL	-	①	②	③	④	⑤	⑥	⑦	⑧
MBR	B	30	45	CT	-1	TRL	-										
①	②	③	④	⑤	⑥	⑦	⑧										
<b>1</b>	- Essential Part Number																
<b>2</b>	- <ul style="list-style-type: none"> <li>• B = D<sup>2</sup>Pak      <b>6</b> none</li> <li>• none = TO-220      <b>6</b> none</li> <li>• none = TO-262      <b>6</b> = -1</li> </ul>																
<b>3</b>	- Current Rating (30 = 30A)																
<b>4</b>	- Voltage Ratings																
<b>5</b>	- CT = Essential Part Number																
<b>6</b>	- <ul style="list-style-type: none"> <li>• none = TO-220      <b>2</b> none</li> <li>• none = D<sup>2</sup>Pak      <b>2</b> = B</li> <li>• -1 = TO-262      <b>2</b> none</li> </ul>																
<b>7</b>	- <ul style="list-style-type: none"> <li>• none = Tube (50 pieces)</li> <li>• TRL = Tape &amp; Reel (Left Oriented - for D<sup>2</sup>Pak only)</li> <li>• TRR = Tape &amp; Reel (Right Oriented - for D<sup>2</sup>Pak only)</li> </ul>																
<b>8</b>	- <ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free (for TO-220TO-262 and D<sup>2</sup>Pak tube)</li> <li>• P = Lead-Free (for D<sup>2</sup>Pak TRR and TRL)</li> </ul>																

35 = 35V  
45 = 45V

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.