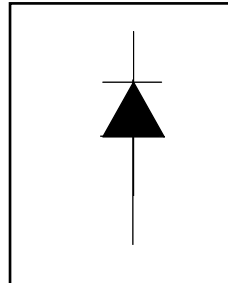


### SURFACE MOUNTABLE INPUT RECTIFIER DIODE

#### Description/Features

The 20ETS..S rectifier series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150° C junction temperature.

Typical applications are in input rectification and these products are designed to be used with International Rectifier Switches and Output Rectifiers which are available in identical package outlines.



$$V_F < 1V @ 10A$$

$$I_{FSM} = 300A$$

$$V_{RRM} 800 \text{ to } 1600V$$

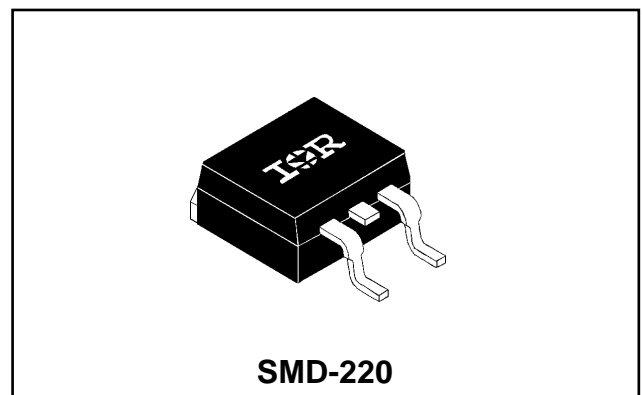
#### Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
NEMA FR-4 or G10 glass fabric-based epoxy with 4 oz (140µm) copper	3.2	5.0	A
Aluminum IMS, $R_{thCA} = 15^{\circ}C/W$	8.1	13.3	
Aluminum IMS with heatsink, $R_{thCA} = 5^{\circ}C/W$	15.7	20.0	

$T_A = 55^{\circ}C$ ,  $T_J = 125^{\circ}C$ , footprint 300mm<sup>2</sup>

#### Major Ratings and Characteristics

Characteristics	20ETS..S	Units
$I_{F(AV)}$ Sinusoidal waveform	20	A
$V_{RRM}$	800 to 1600	V
$I_{FSM}$	300	A
$V_F @ 10A, T_J = 25^{\circ}C$	1.0	V
$T_J$	-40 to 150	°C



## Voltage Ratings

Part Number	$V_{RRM}$ , maximum peak reverse voltage V	$V_{RSM}$ , maximum non repetitive peak reverse voltage V	$I_{RRM}$ 150°C mA
20ETS08S	800	900	1
20ETS12S	1200	1300	
20ETS16S	1600	1700	

Provide terminal coating for voltages above 1200V

## Absolute Maximum Ratings

Parameters	20ETS..S	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	20	A	50% duty cycle @ $T_C = 105^\circ\text{C}$ , sinusoidal wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	250	A	10ms Sine pulse, rated $V_{RRM}$ applied
	300		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	316	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	442		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	3160	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

## Electrical Specifications

Parameters	20ETS..S	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.1	V	@ 20A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	10.4	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.85	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	1.0		$T_J = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

## Thermal-Mechanical Specifications

Parameters	20ETS..S	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
Soldering Temperature	240	$^\circ\text{C}$	for 10 seconds (1.6mm from case)
$R_{thJC}$ Max. Thermal Resistance Junction to Case	1.3	$^\circ\text{C}/\text{W}$	DC operation
$R_{thJA}$ Typ. Thermal Resistance Junction to Ambient (PCB Mount)**	40	$^\circ\text{C}/\text{W}$	
wt Approximate Weight	2 (0.07)	g (oz.)	
T Case Style	SMD-220		

\*\*When mounted on 1" square (650mm<sup>2</sup>) PCB of FR-4 or G-10 material 4 oz (140μm) copper 40°C/W  
For recommended footprint and soldering techniques refer to application note #AN-994

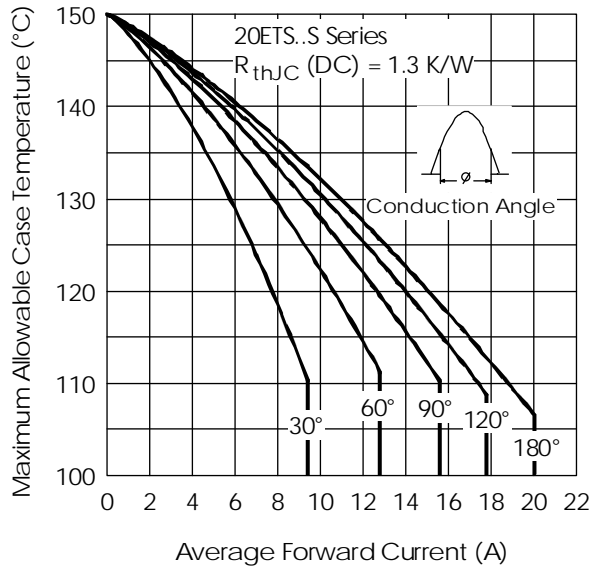


Fig. 1 - Current Rating Characteristics

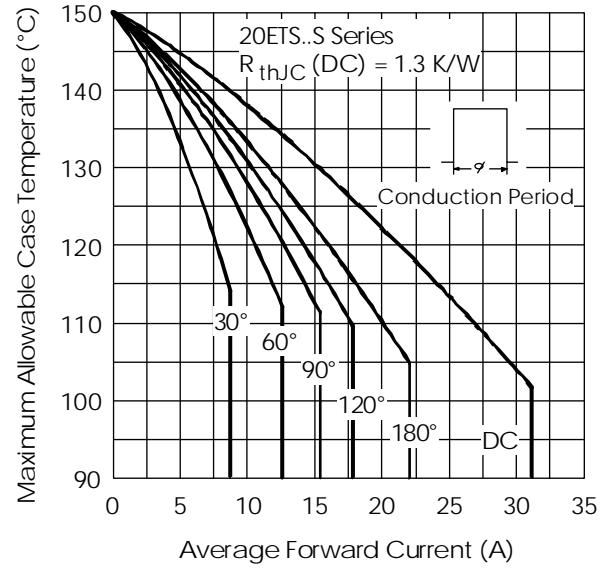


Fig. 2 - Current Rating Characteristics

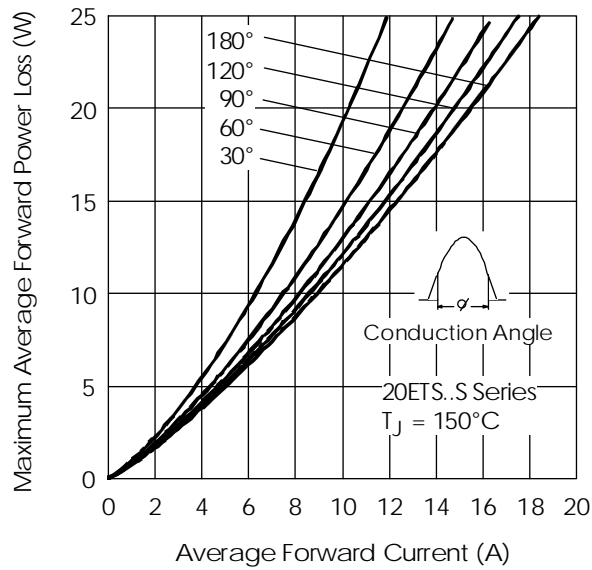


Fig. 3 - Forward Power Loss Characteristics

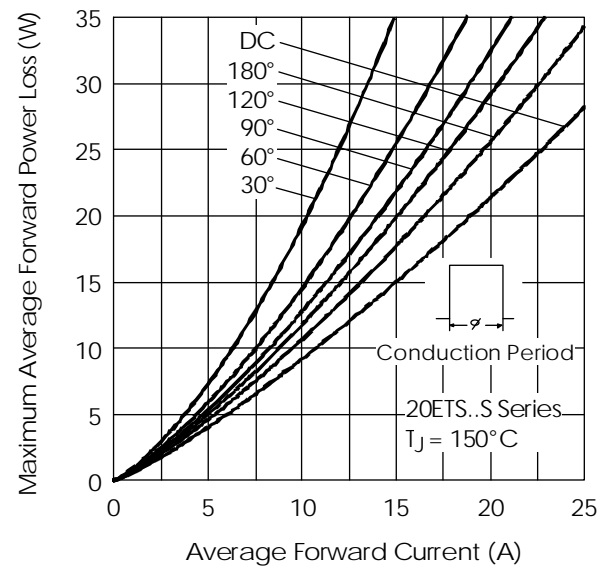


Fig. 4 - Forward Power Loss Characteristics

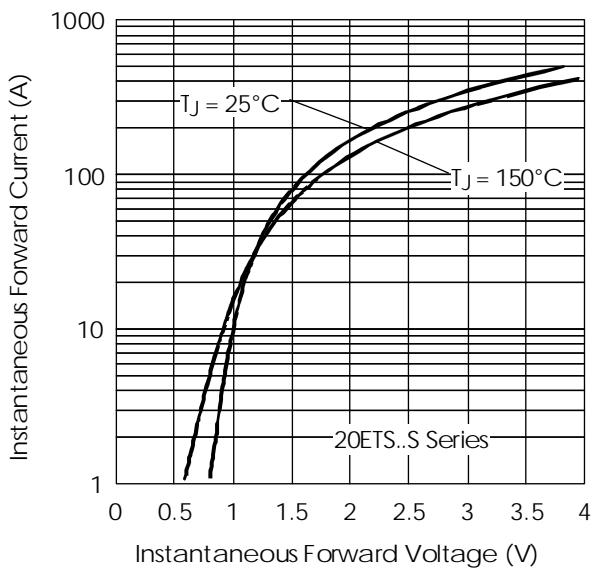


Fig. 5 - Forward Voltage Drop Characteristics

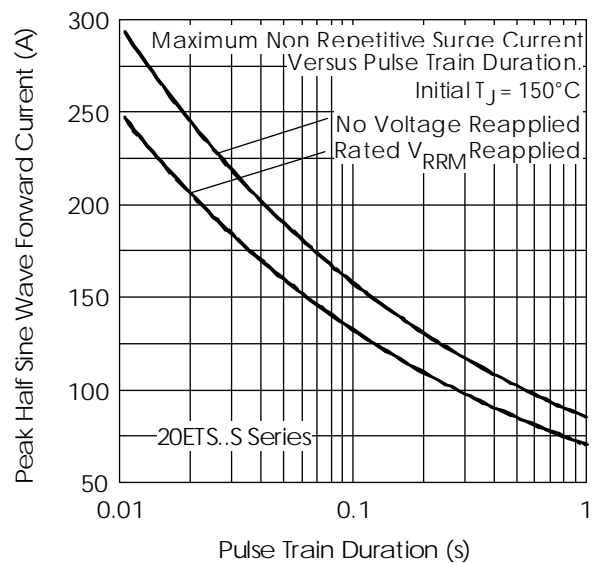


Fig. 6 - Maximum Non-Repetitive Surge Current

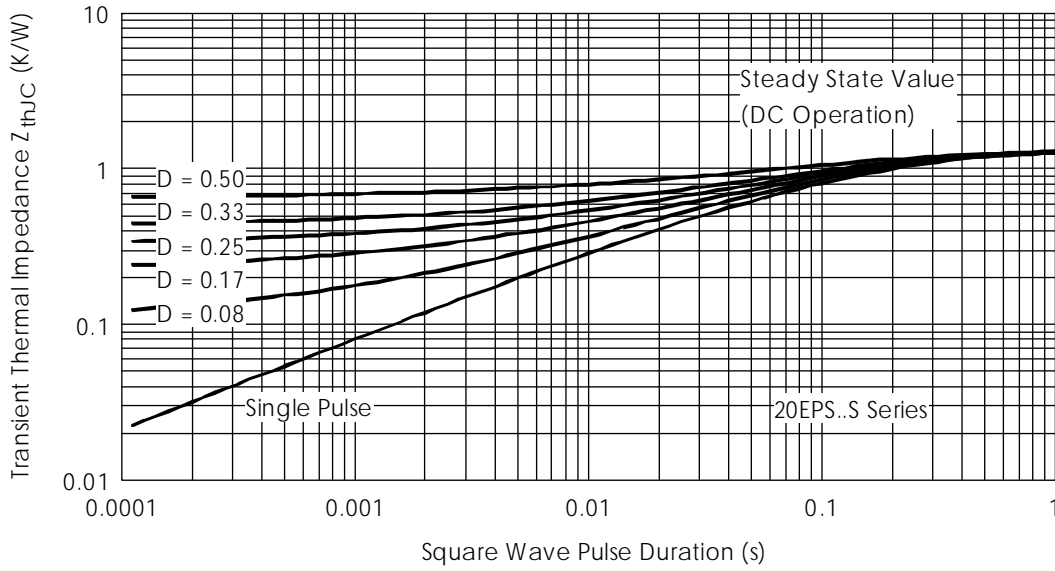
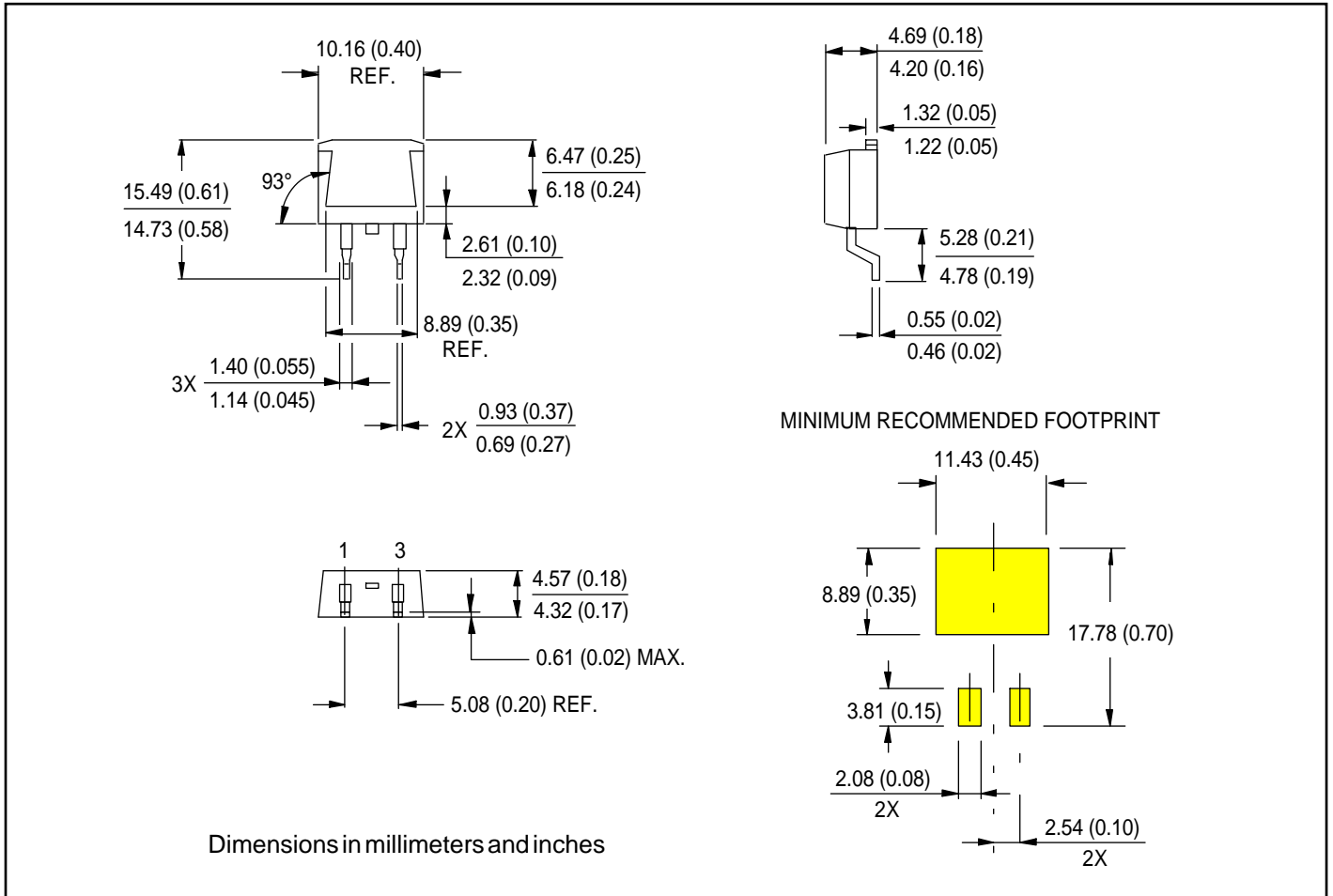
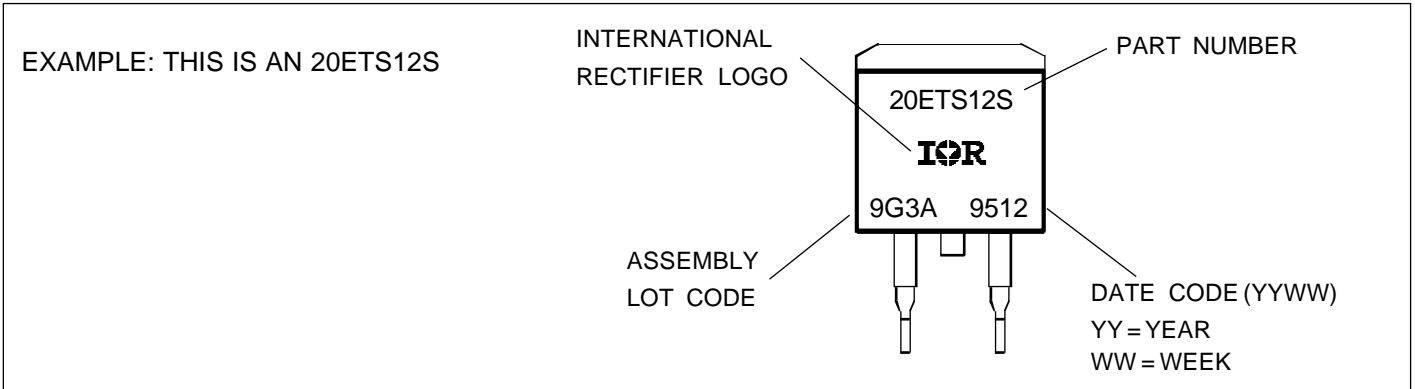


Fig. 7 - Thermal Impedance  $Z_{thJC}$  Characteristics

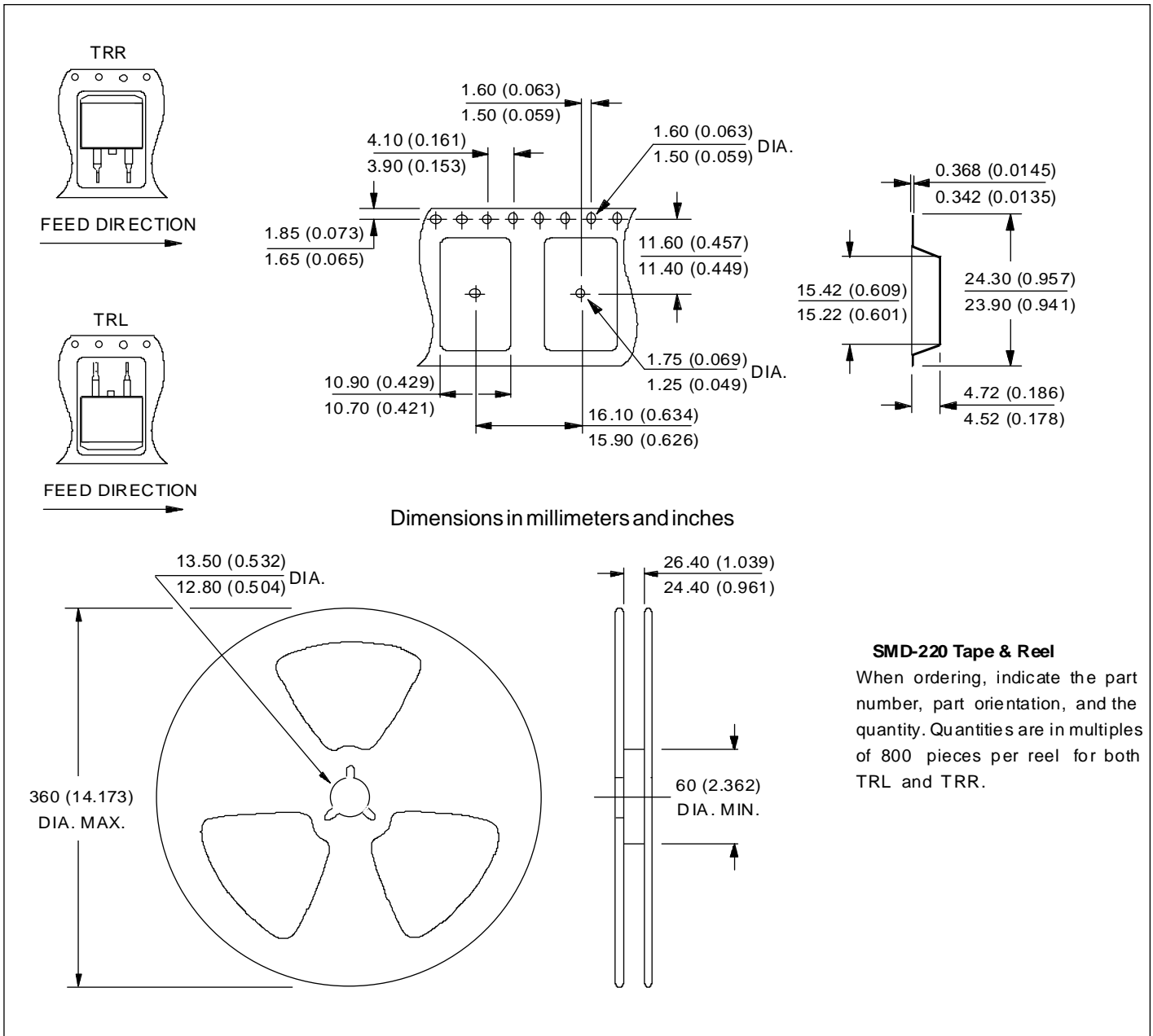
Outline Table



Marking Information



Tape & Reel Information



## Ordering Information Table

Device Code						
20	E	T	S	16	S	TRL
①	②	③	④	⑤	⑥	⑦

<p><b>1</b> - Current Rating</p> <p><b>2</b> - Circuit Configuration</p> <p><b>3</b> - Package</p> <p><b>4</b> - Type of Silicon</p> <p><b>5</b> - Voltage code: Code x 100 = <math>V_{RRM}</math></p> <p><b>6</b> - S = TO-220 SMD 220 Version</p> <p><b>7</b> - Tape and Reel Option</p> <p>TRL = Left Reel</p> <p>TRR = Right Orientation Reel</p>	<p>E = Single Diode</p> <p>T = TO-220AC</p> <p>S = Standard Recovery Rectifier</p>	<p>08 = 800V</p> <p>12 = 1200V</p> <p>16 = 1600V</p>
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BASE

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