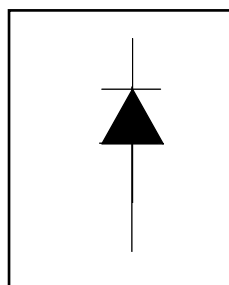


SURFACE MOUNTABLE INPUT RECTIFIER DIODE

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.



$$V_F < 1V @ 10A$$

$$I_{FSM} = 300A$$

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

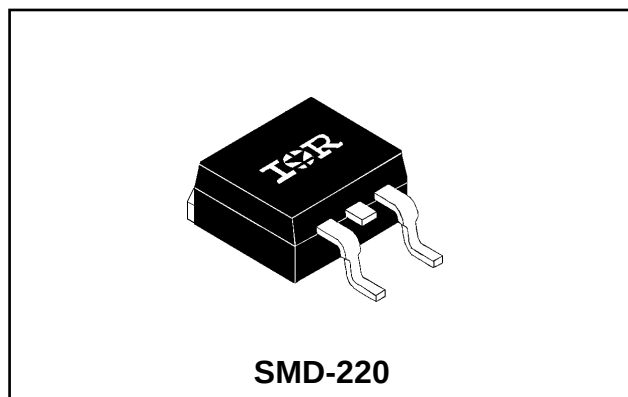
Output Current in Typical Applications

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 300mm²

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 @ 10 A, $T_J = 25^{\circ}C$	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	$^\circ\text{C/W}$	DC operation
R_{thJA} Typ. Thermal Resistance Junction to Ambient (PCB Mount)**	40	$^\circ\text{C/W}$	
wt Approximate Weight	2 (0.07)	g (oz.)	
T Case Style	SMD-220		

**When mounted on 1" square (650mm²) 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

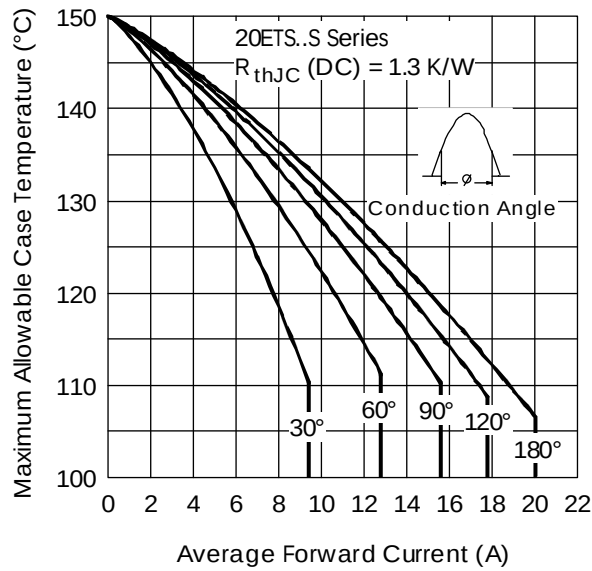


Fig. 1 - Current Rating Characteristics

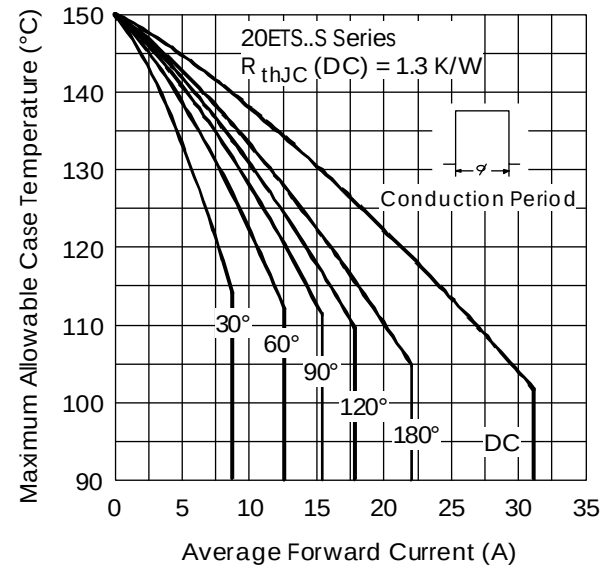


Fig. 2 - Current Rating Characteristics

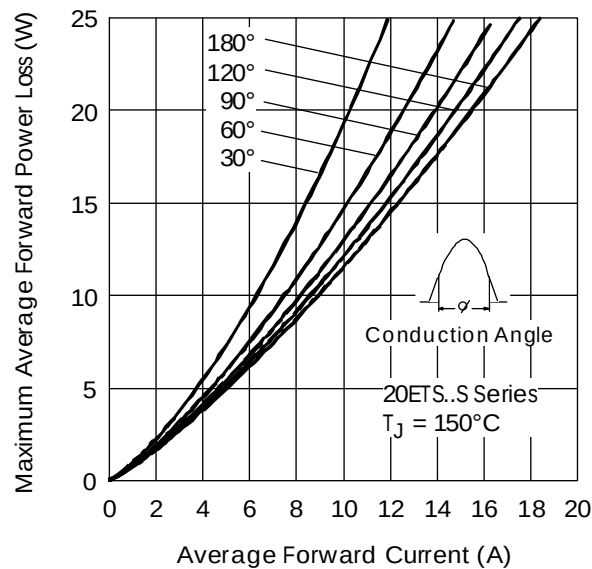


Fig. 3 - Forward Power Loss Characteristics

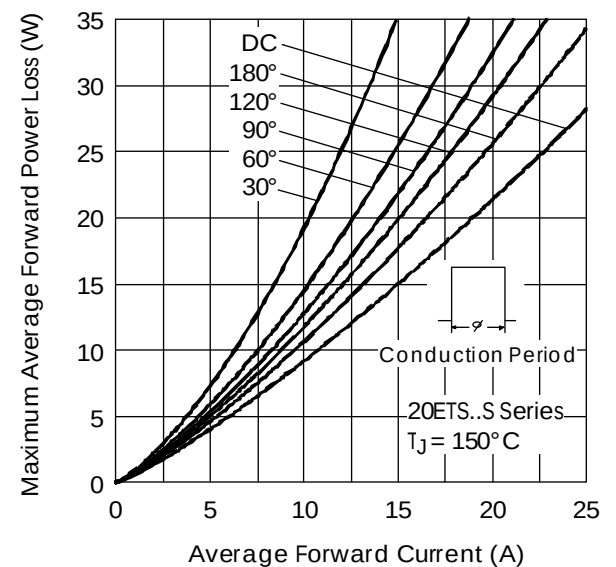


Fig. 4 - Forward Power Loss Characteristics

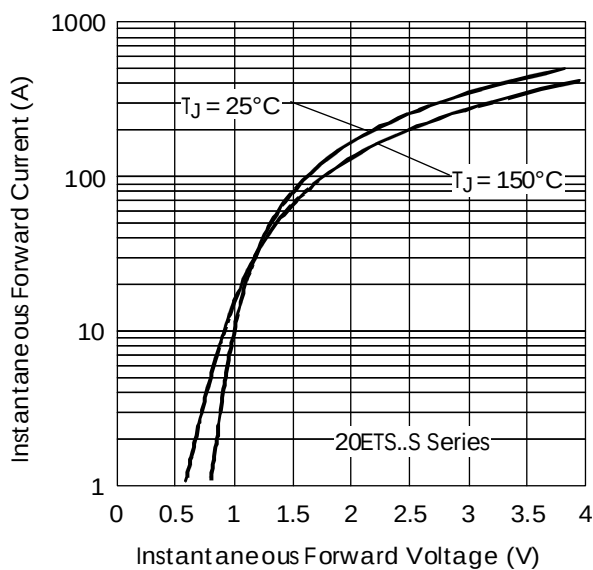


Fig. 5 - Forward Voltage Drop Characteristics

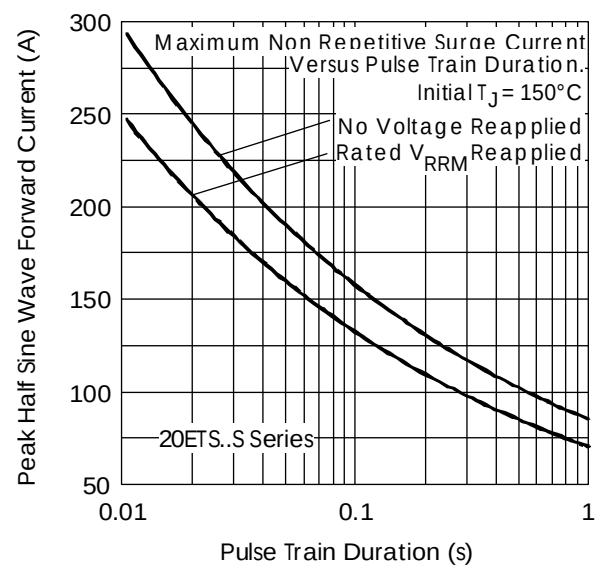


Fig. 6 - Maximum Non-Repetitive Surge Current

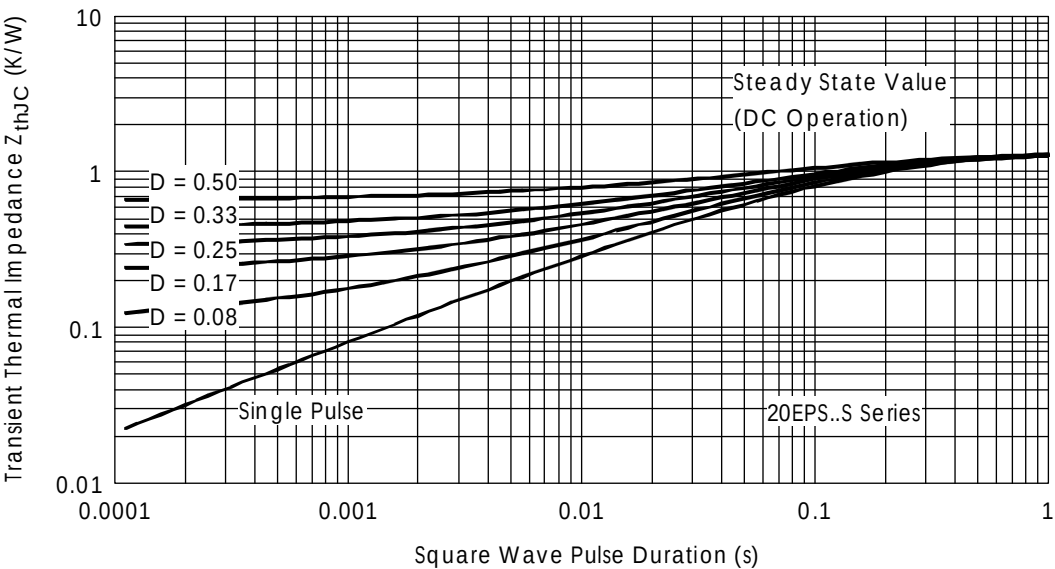
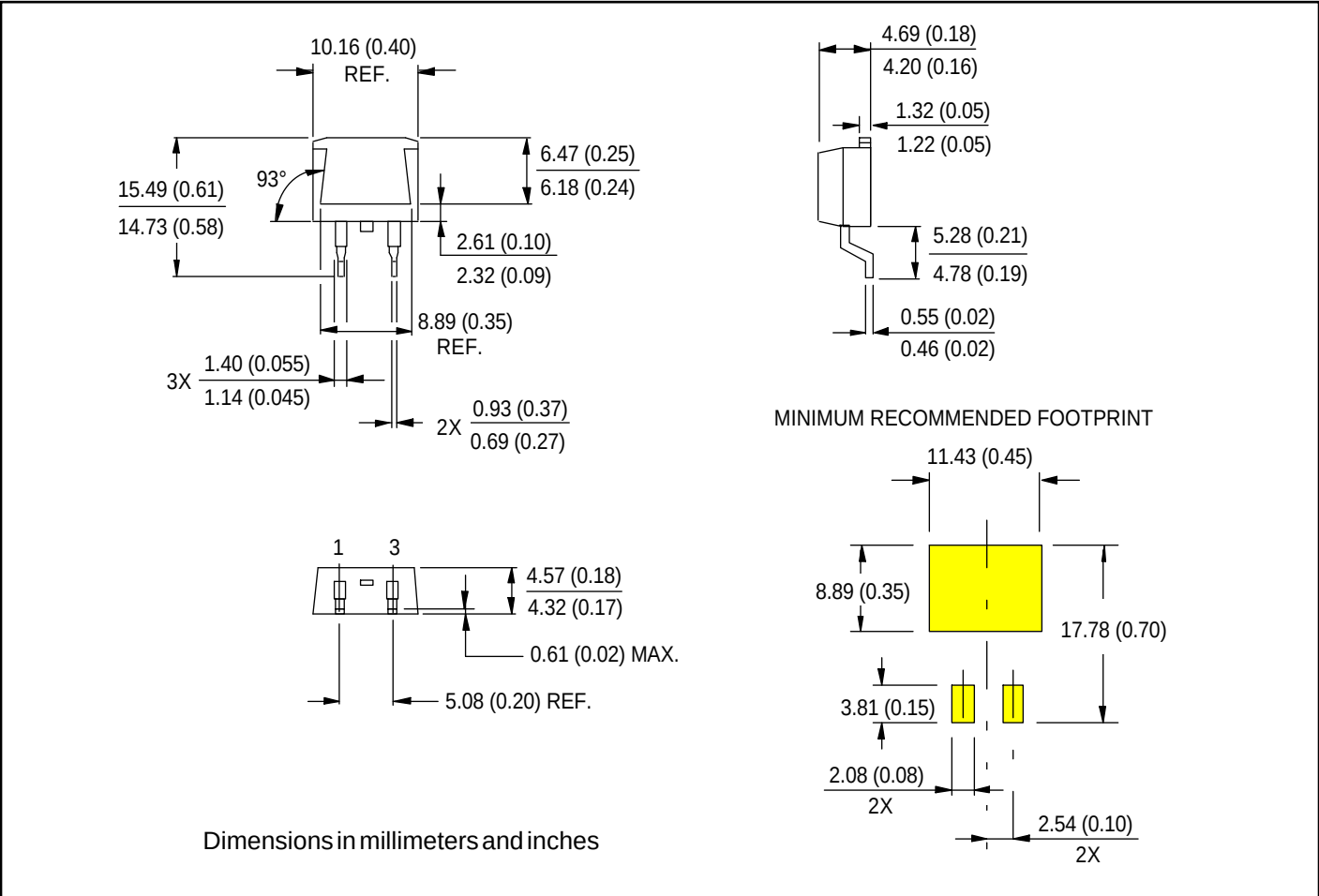
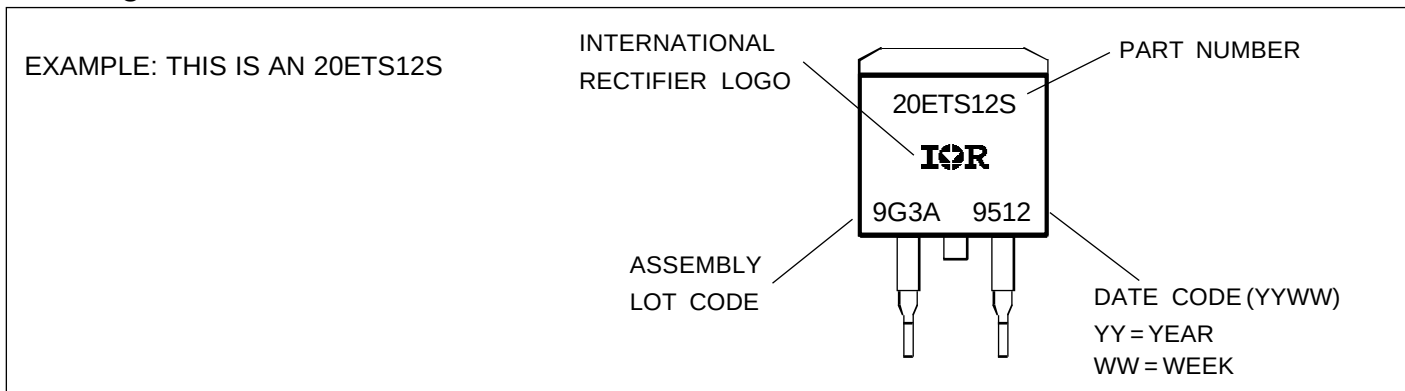


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics

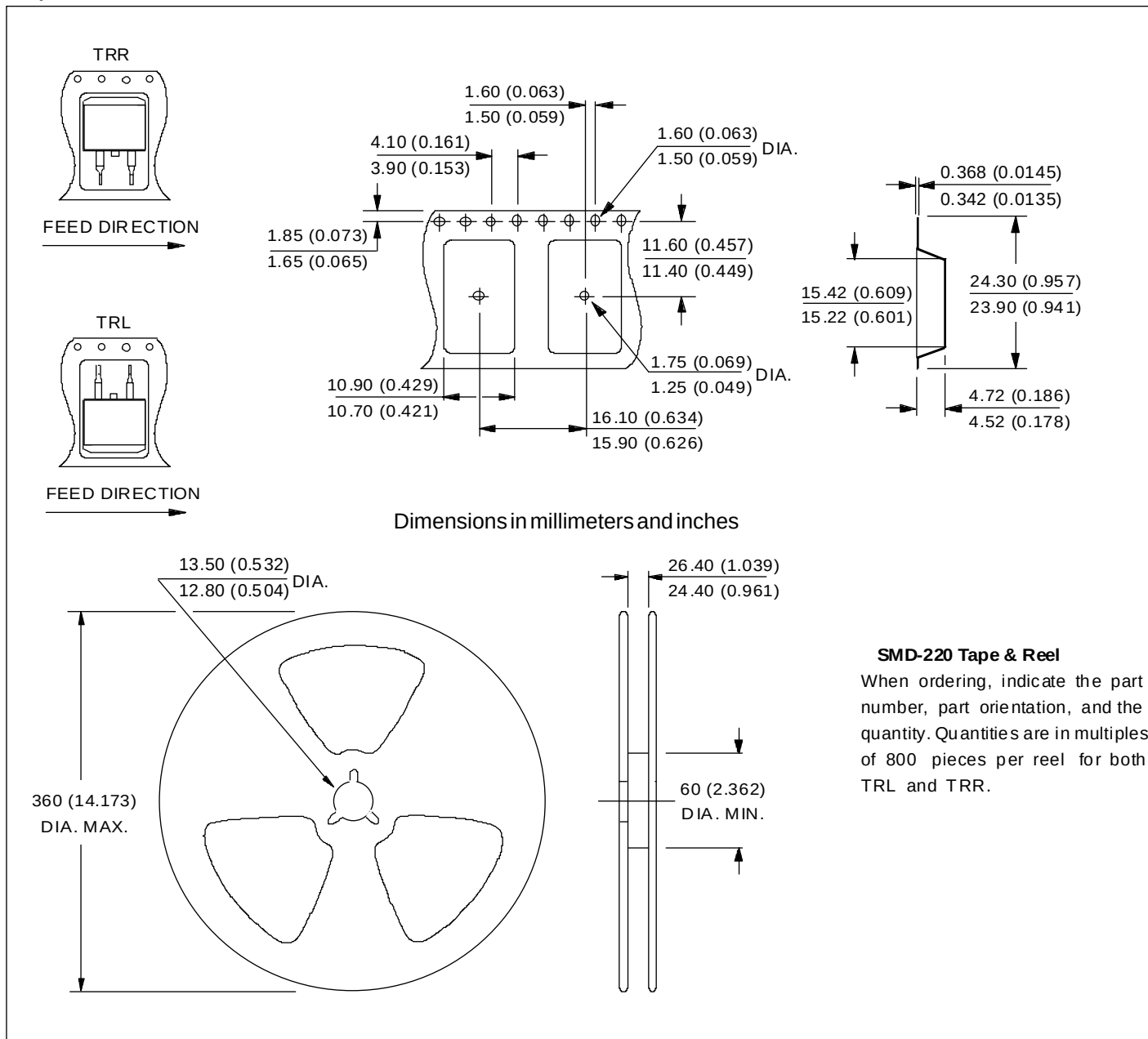
Outline Table



Marking Information

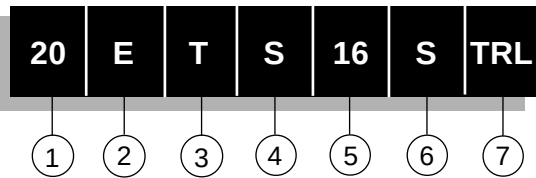


Tape & Reel Information



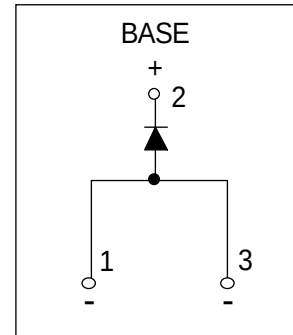
Ordering Information Table

Device Code



- 1** - Current Rating
- 2** - Circuit Configuration
E = Single Diode
- 3** - Package
T = TO-220AC
- 4** - Type of Silicon
S = Standard Recovery Rectifier
- 5** - Voltage code: Code x 100 = V_{RRM}
- 6** - S = TO-220 SMD 220 Version
- 7** - Tape and Reel Option
TRL = Left Reel
TRR = Right Orientation Reel

08	= 800V
12	= 1200V
16	= 1600V



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