



40L15CT  
40L15CTS  
40L15CT-1

SCHOTTKY RECTIFIER

2 x 20 Amps

**Major Ratings and Characteristics**


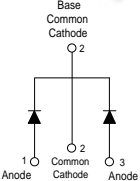

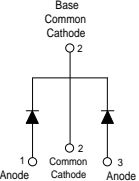

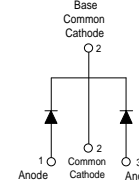
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
$V_{RRM}$	15	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	700	A
$V_F$ @19Apk, $T_J = 125^\circ\text{C}$ (per leg, Typical)	0.25	V
$T_J$	-55 to 125	$^\circ\text{C}$

**Description/Features**

The center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125  $^\circ\text{C}$  junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125  $^\circ\text{C}$   $T_J$  operation ( $V_R < 5\text{V}$ )
- Center tap module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

**Case Styles**

40L15CT	40L15CTS	40L15CT-1
 <p>Base Common Cathode O 2</p>  <p>1 O Anode O 2 Common Cathode O 3 Anode</p> <p>TO-220AB</p>	 <p>Base Common Cathode O 2</p>  <p>1 O Anode O 2 Common Cathode O 3 Anode</p> <p>D²PAK</p>	 <p>Base Common Cathode O 2</p>  <p>1 O Anode O 2 Common Cathode O 3 Anode</p> <p>TO-262</p>

## Voltage Ratings

Part number	Values
$V_R$ Max. DC Reverse Voltage (V) @ $T_J = 100\text{ }^\circ\text{C}$	15
$V_{RWM}$ Max. Working Peak Reverse Voltage (V) @ $T_J = 100\text{ }^\circ\text{C}$	

## Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device)	20 40	A	50% duty cycle @ $T_C = 85\text{ }^\circ\text{C}$ , rectangular waveform
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	700 330	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated $V_{RWM}$ applied
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25\text{ }^\circ\text{C}$ , $I_{AS} = 2\text{ Amps}$ , $L = 6\text{ mH}$
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_{Jmax}$ . $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	Values		Units	Conditions
	Typ.	Max.		
$V_{FM}$ Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	-	0.41	V	@ 19A $T_J = 25\text{ }^\circ\text{C}$
	-	0.52	V	@ 40A
	0.25	0.33	V	@ 19A $T_J = 125\text{ }^\circ\text{C}$
	0.37	0.50	V	@ 40A
$I_{RM}$ Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	-	10	mA	$T_J = 25\text{ }^\circ\text{C}$
	-	600	mA	$T_J = 100\text{ }^\circ\text{C}$ $V_R = \text{rated } V_R$
$V_{F(TO)}$ Threshold Voltage	0.182		V	$T_J = T_J \text{ max.}$
$r_t$ Forward Slope Resistance	7.6		m $\Omega$	
$C_T$ Max. Junction Capacitance (Per Leg)	-	2000	pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25\text{ }^\circ\text{C}$
$L_S$ Typical Series Inductance (Per Leg)	8	-	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change (Rated $V_R$ )	10,000		V/ $\mu\text{s}$	

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

## Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 125	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	1.5	$^\circ\text{C/W}$	DC operation * See Fig. 4
$R_{thCS}$ 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	40	$^\circ\text{C/W}$	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)	Non-lubricated threads
	Max.	12(10)	

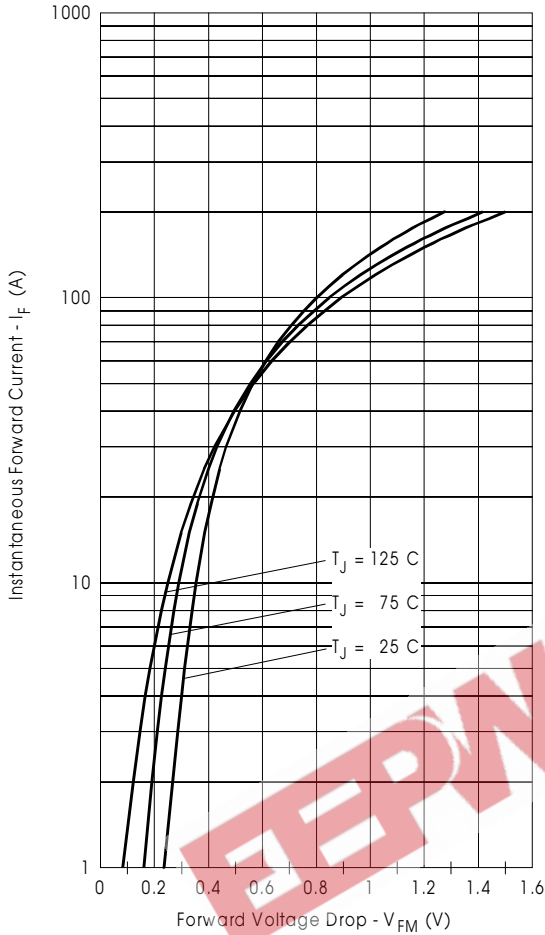


Fig. 1 - Maximum Forward Voltage Drop Characteristics

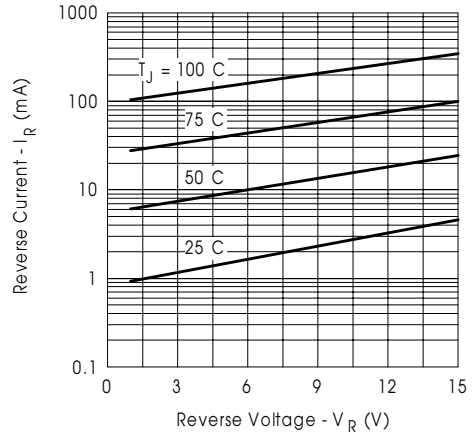


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

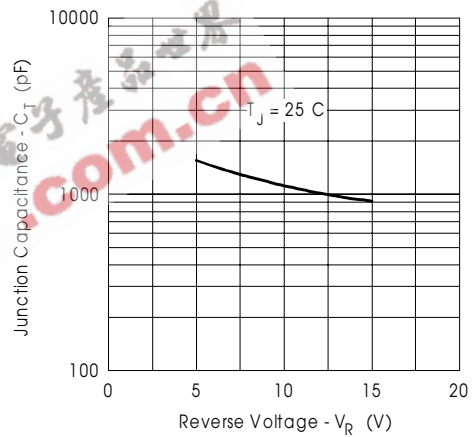


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

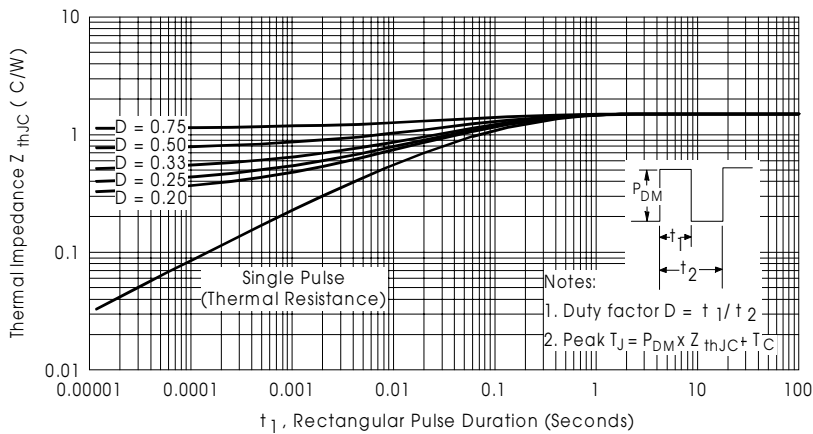


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

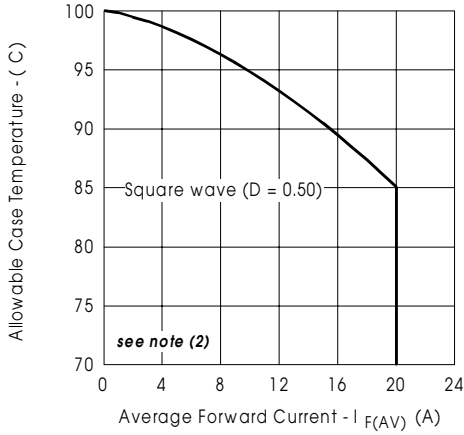


Fig. 5- Maximum Allowable Case Temperature Vs. Average Forward Current

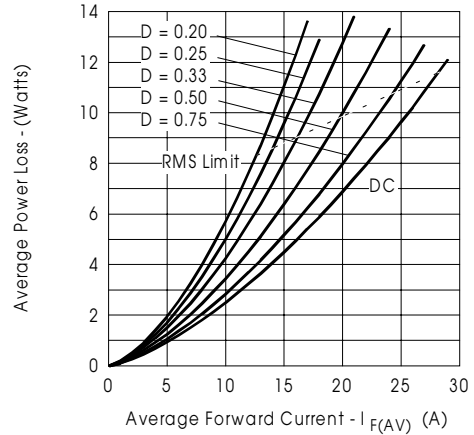


Fig. 6- Forward Power Loss Characteristics

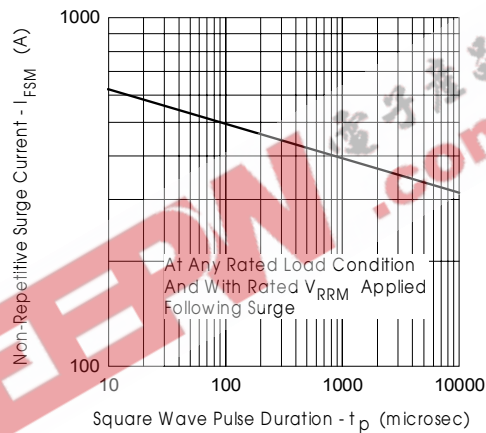


Fig. 7- Maximum Non-Repetitive Surge Current

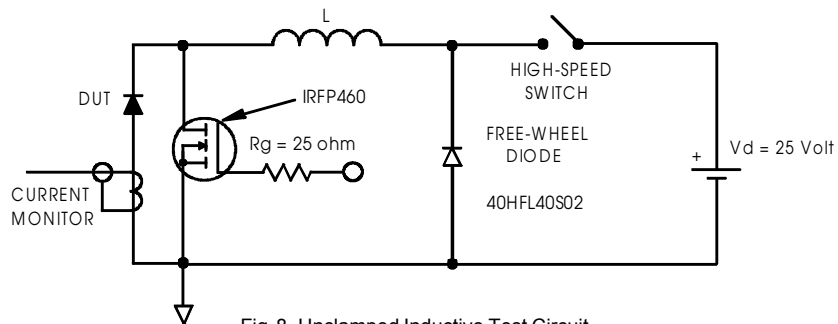


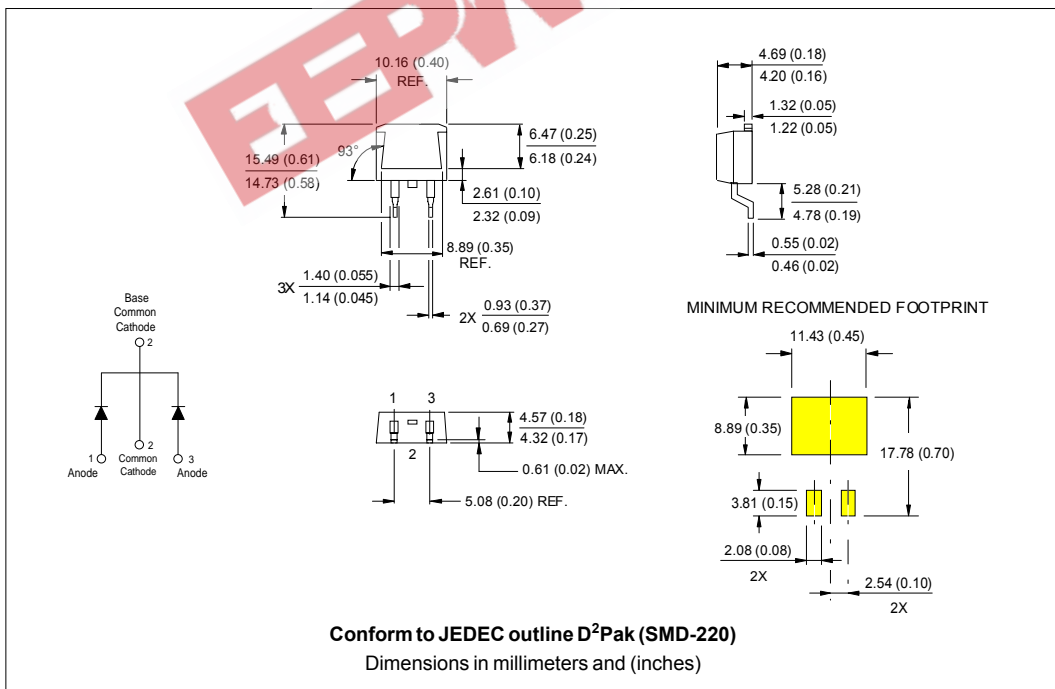
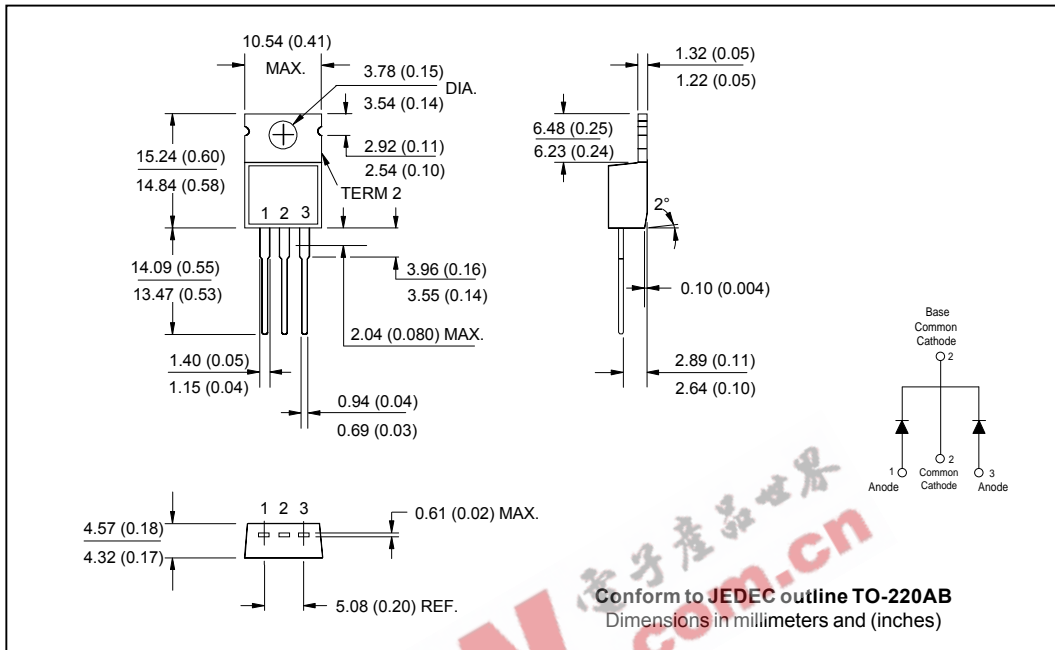
Fig. 8- Unclamped Inductive Test Circuit

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

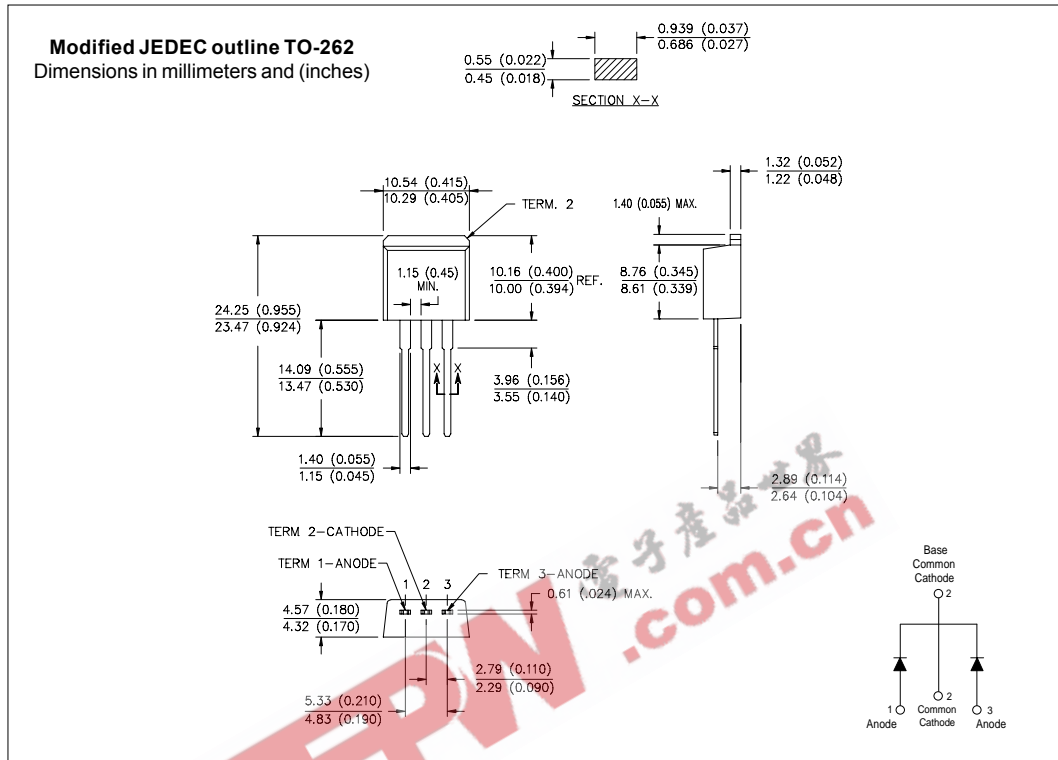
$Pd$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

$Pd_{REV}$  = Inverse Power Loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = 80\%$  rated  $V_R$

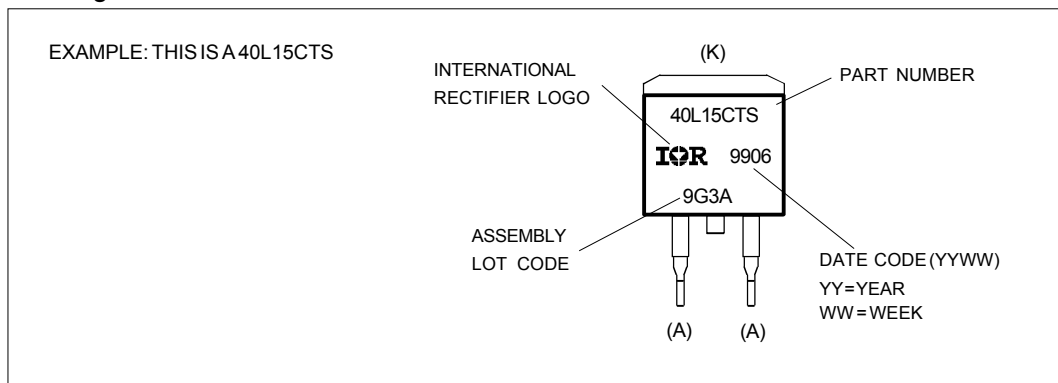
Outline Table



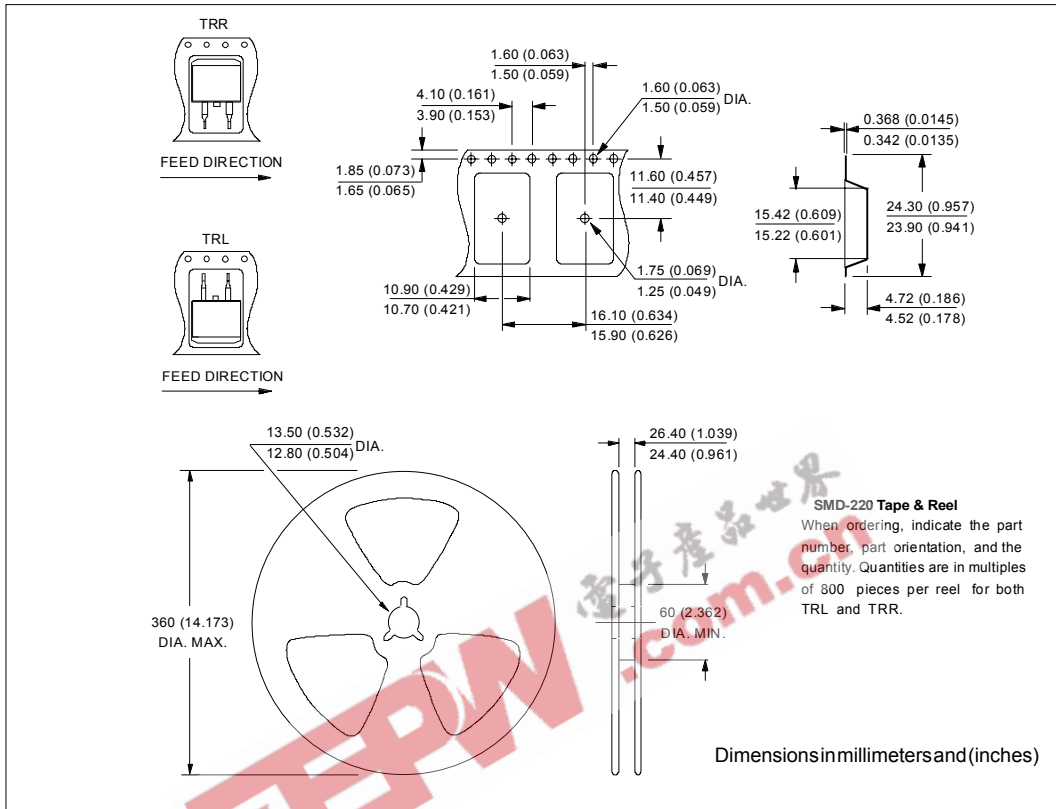
Outline Table



Marking Information



Tape & Reel Information



Ordering Information Table

Device Code					
40	L	15	C	T	-1
①	②	③	④	⑤	⑥
1	-	Current Rating: 40 = 40A	2	-	L = Schottky L Series
3	-	Voltage Rating: 15 = 15V	4	-	C = Common Cathode
5	-	T = TO-220	6	-	-1 = TO-262 option

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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.

International  
**IR** Rectifier

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