

International
IR Rectifier

STPS30L30CT
STPS30L30CG

SCHOTTKY RECTIFIER

30 Amp

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	2 x 15	A
V_{RRM}	30	V
V_F @ 15 Apk, $T_J = 125^\circ\text{C}$ (Per Leg)	0.37	V
T_J range	-55 to 150	$^\circ\text{C}$

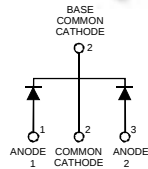
Description/ Features

This center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. 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 configuration
- Very 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

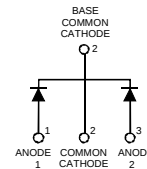
Case Styles

STPS30L30CT



TO-220

STPS30L30CG



D²PAK

Voltage Ratings

Parameters	Values
V_R Max. DC Reverse Voltage (V)	30
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Per Device Current Per Leg	30 15	A	50% duty cycle @ $T_C = 140^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	1450 220	A	5 μs Sine or 3 μs 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)	15	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{ Amps}$, $L = 7.5\text{ mH}$
I_{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 μsec 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 (Per Leg) (1)	0.46	V	@ 15A
	0.57	V	@ 30A
	0.37	V	@ 15A
	0.50	V	@ 30A
I_{RM} Max. Reverse Leakage Current (Per Leg)	1.50	mA	$T_J = 25^\circ\text{C}$
	350	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	1500	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance (Per Leg)	8.0	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change (Rated V_R)	10000	V/ μs	

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
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
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.8	$^\circ\text{C/W}$	DC operation
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	

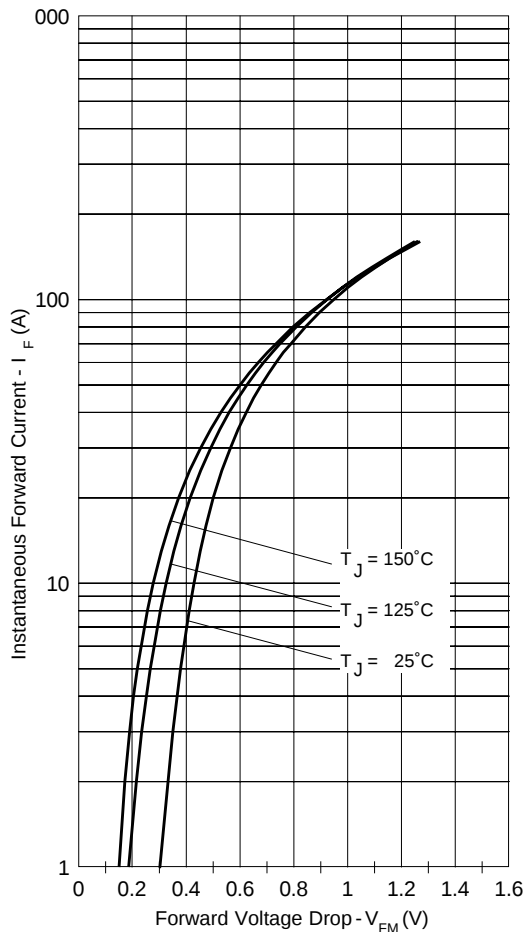


Fig. 1 - Maximum Forward Voltage Drop Characteristics

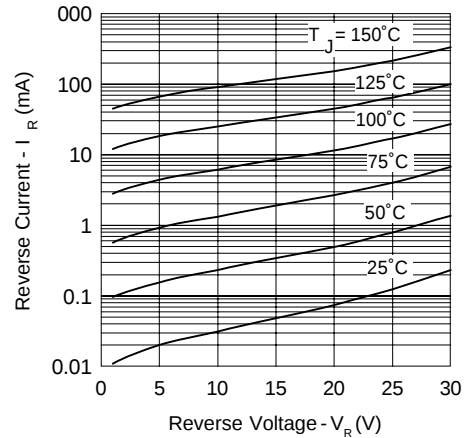


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

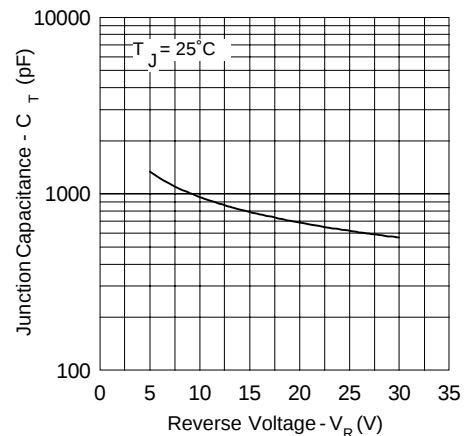


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

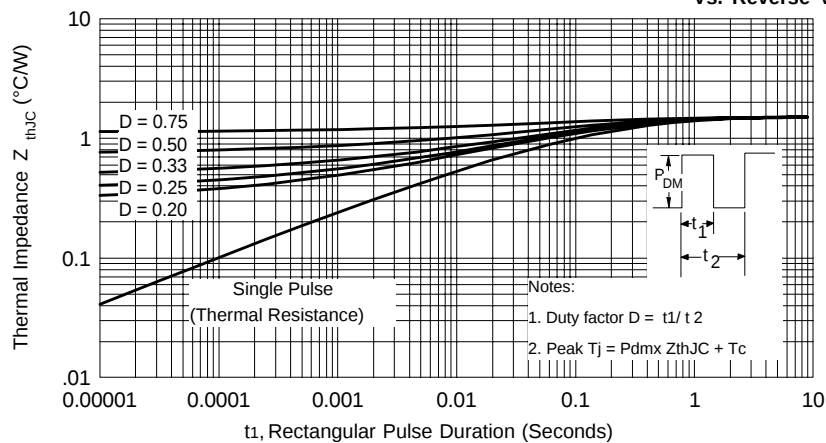


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

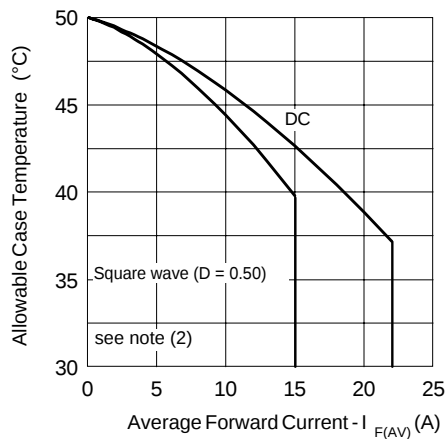


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

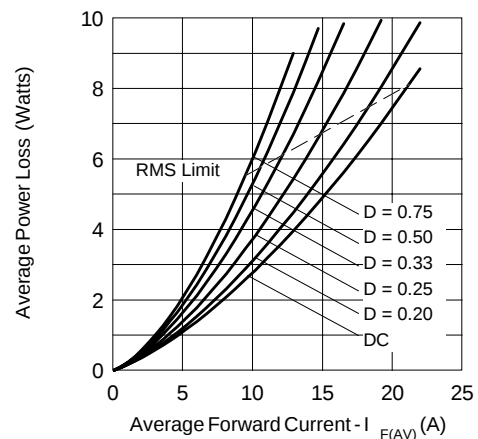


Fig. 6 - Forward Power Loss Characteristics

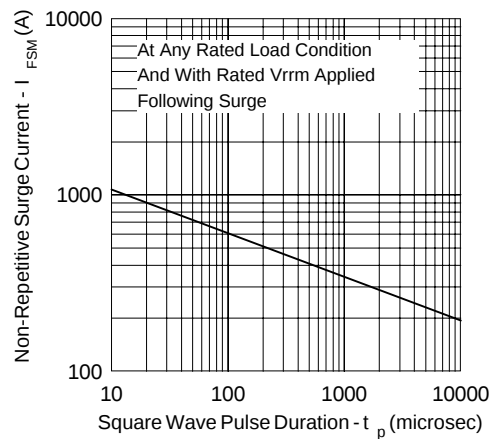
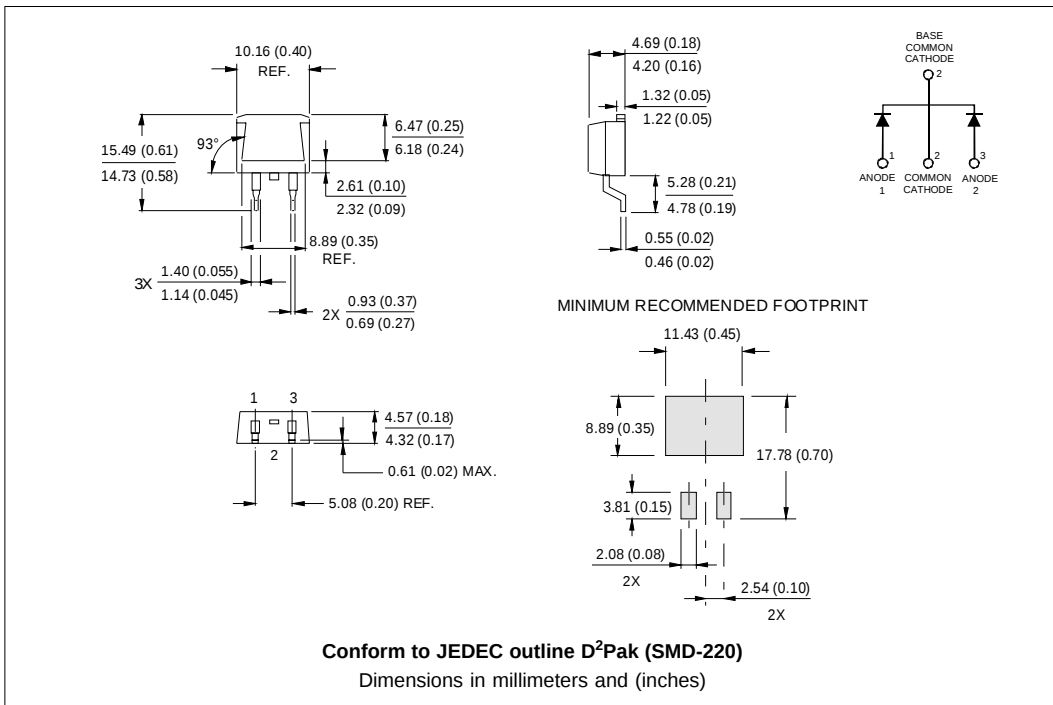
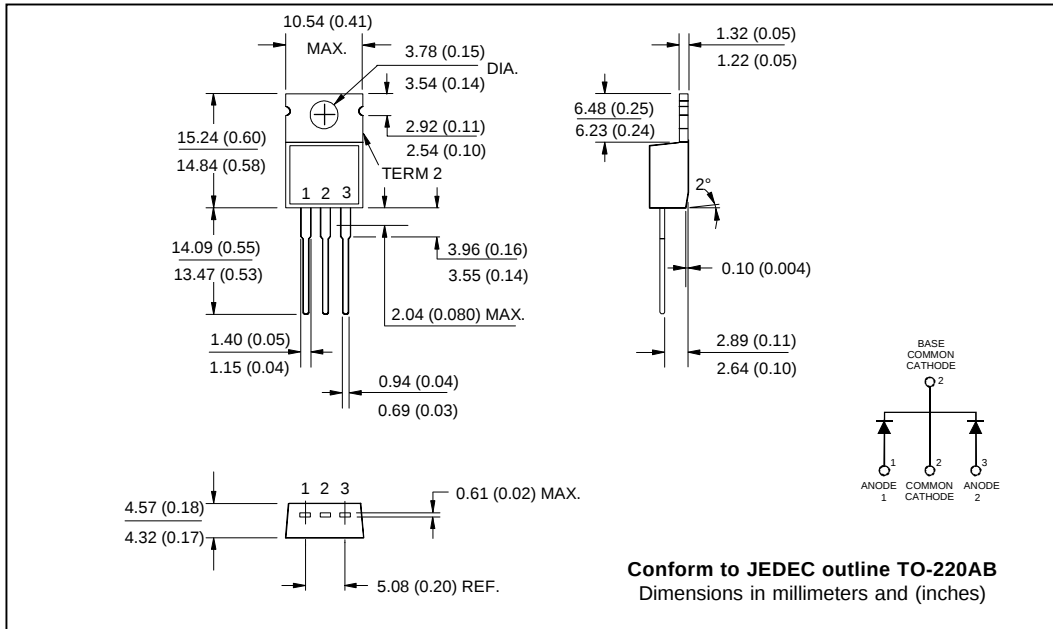


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

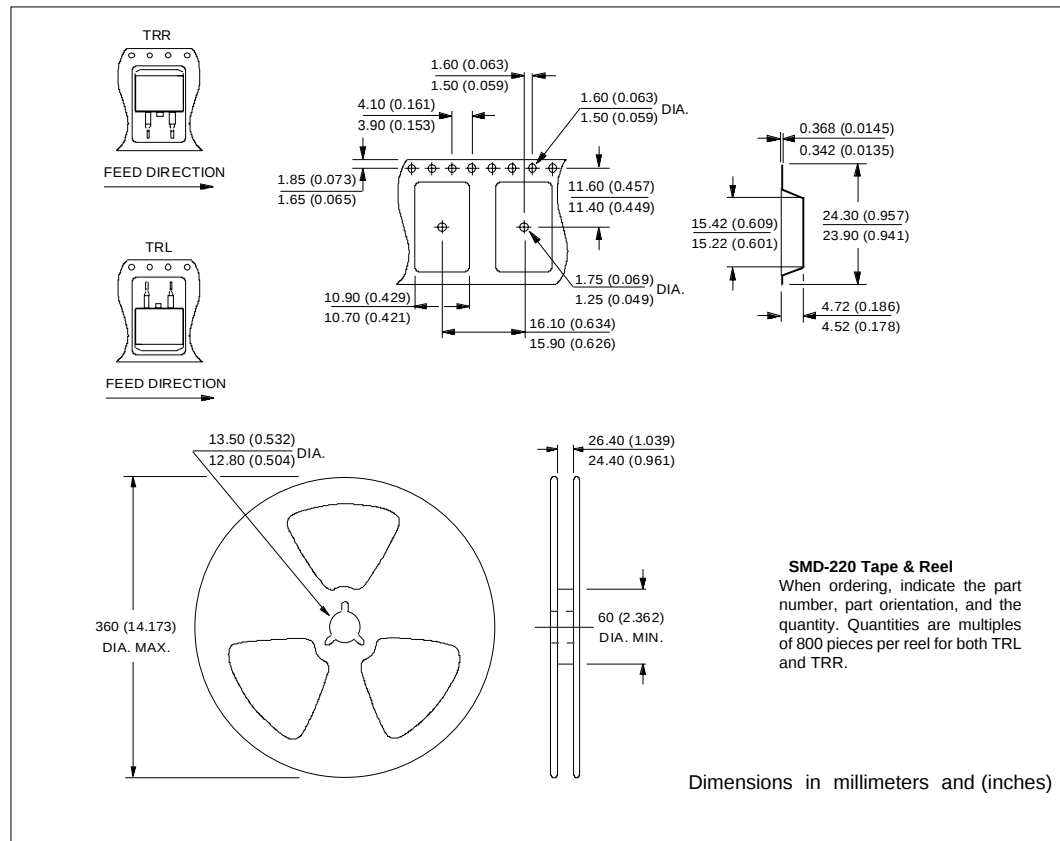
(2) Formula used: $T_C = T_J - P_d \times R_{thJC}$;

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

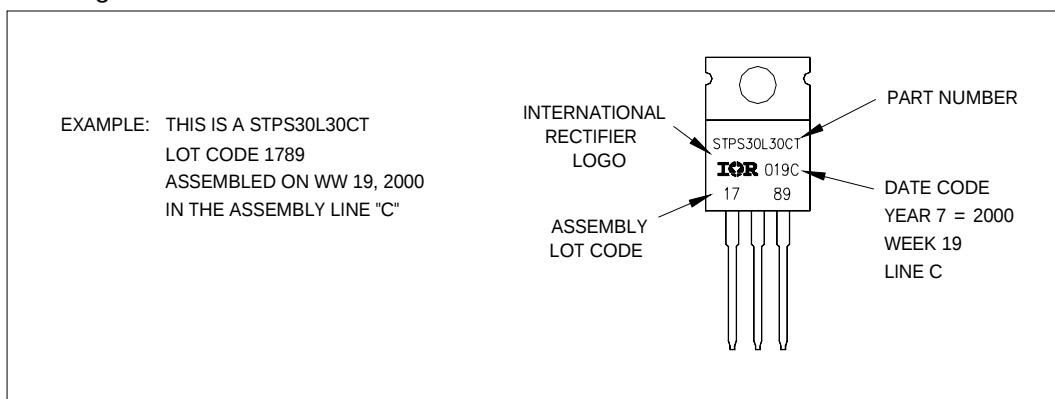
Outline Table



Tape & Reel Information



Marking Information



30L30CT

This model has been developed by
Wizard SPICE MODEL GENERATOR (1999)
(International Rectifier Corporation)
contains Proprietary Information

SPICE Model Diode is composed by a
simple diode plus paralld VCG2T

.SUBCKT 30L30ct ANO CAT

D1 ANO 1 DMOD (0.08936)

*Define diode model

.MODEL DMOD D(IS=3.01789428908089E-04A,N=1.12506549677918,BV=35V,

+ IBV=0.40837541124234A,RS= 0.000285952,CJO=3.65460570356249E-08,

+ VJ=0.934944724736772,XTI=2, EG=0.674450307828855)

*Implementation of VCG2T

VX 1 2 DC 0V

R1 2 CAT TRES 1E-6

.MODEL TRES RES(R=1,TC1=11.2856367229303)

GP1 ANO CAT VALUE={-ABS(I(VX))*(EXP(((-2.138249E-03/11.28564)*((V(2,CAT)*1E6)/(I(VX)+1E-6)-1)))+1)*9.434315E-02*ABS(V(ANO,CAT)))-1}

.ENDS 30L30ct

Thermal Model Subcircuit

.SUBCKT 30L30CT 5 1

CTHERM1 5 4 3.53E-1

CTHERM2 4 3 6.35E0

CTHERM3 3 2 5.15E+1

CTHERM4 2 1 4.08E+3

RTHERM1 5 4 3.15E-1

RTHERM2 4 3 6.15E-1

RTHERM1 3 2 3.7E-1

RTHERM1 2 1 1.98E-1

.ENDS 30L30CT

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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Visit us at www.irf.com for sales contact information. 02/03