

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

Major Ratings and Characteristics


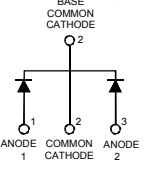

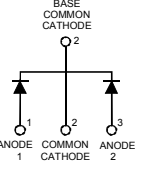
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	2 x 15	A
V_{RRM}	30	V
V_F @ 15Apk, $T_J = 125^\circ\text{C}$ (Per Leg)	0.37	V
T_J range	-55 to 150	$^\circ\text{C}$

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	STPS30L30CG
  <p>TO-220</p>	  <p>D²PAK</p>

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 Current Per Device 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 $T_J = 25^\circ\text{C}$
	0.57	V	@ 30A
	0.37	V	@ 15A $T_J = 125^\circ\text{C}$
	0.50	V	@ 30A
I_{RM} Max. Reverse Leakage Current (Per Leg)	1.50	mA	$T_J = 25^\circ\text{C}$
	350	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
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	$^\circ\text{C}/\text{W}$	DC operation
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.8	$^\circ\text{C}/\text{W}$	DC operation
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	
	Max. 12 (10)		
Marking Device	STPS 30L30CT	Case Style TO-220	
	STPS30L30CG	Case Style D ² Pak	

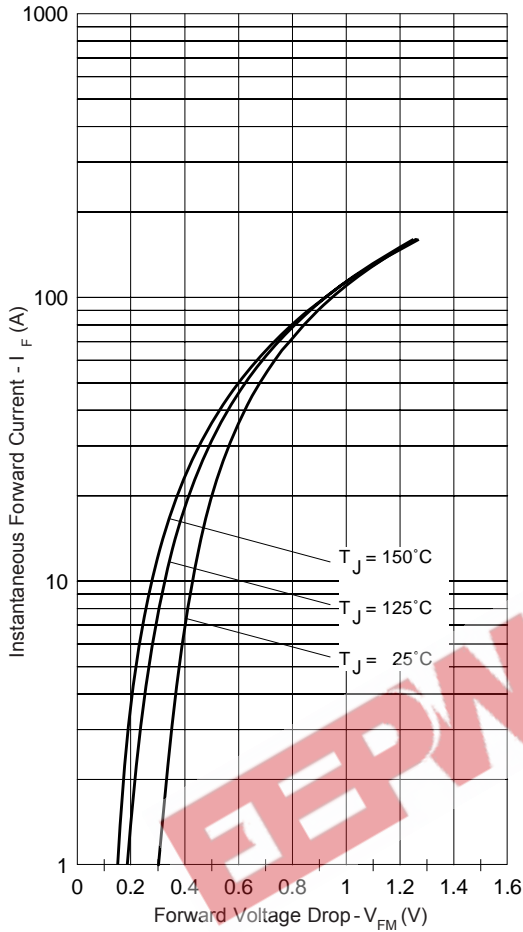


Fig. 1 - Maximum Forward Voltage Drop Characteristics

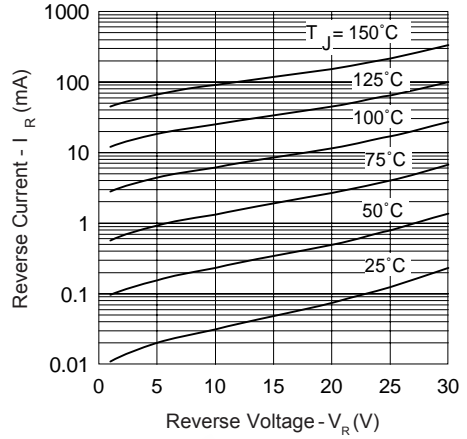


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

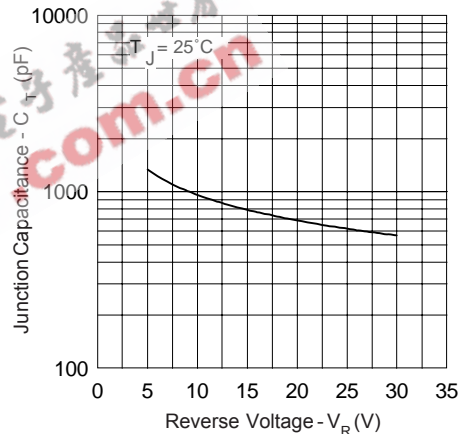


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

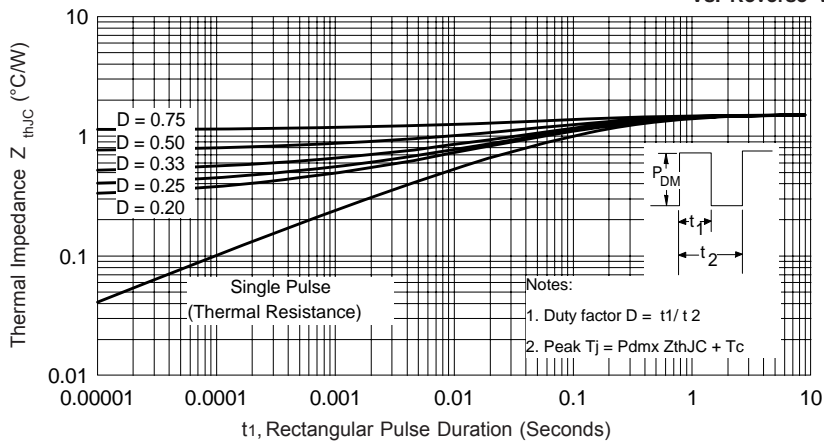


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

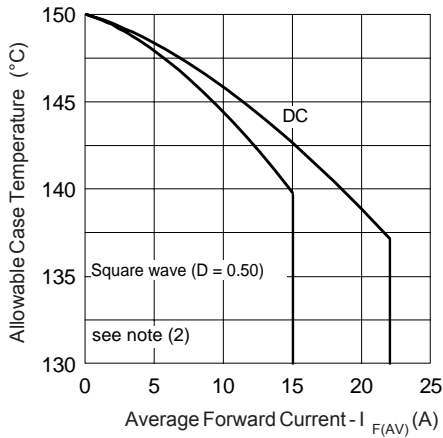


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

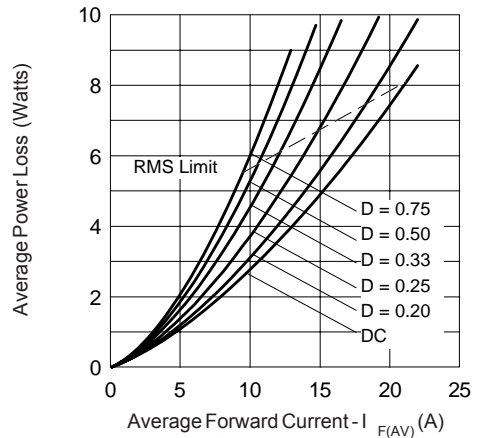


Fig. 6 - Forward Power Loss Characteristics

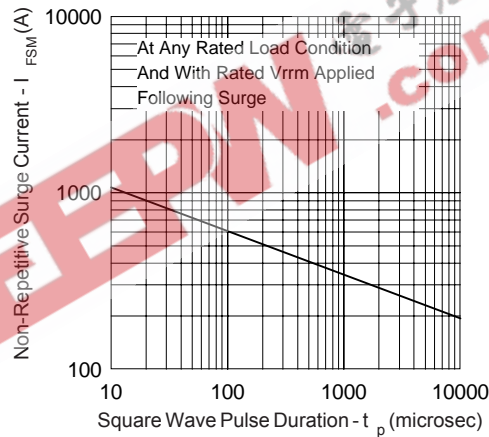
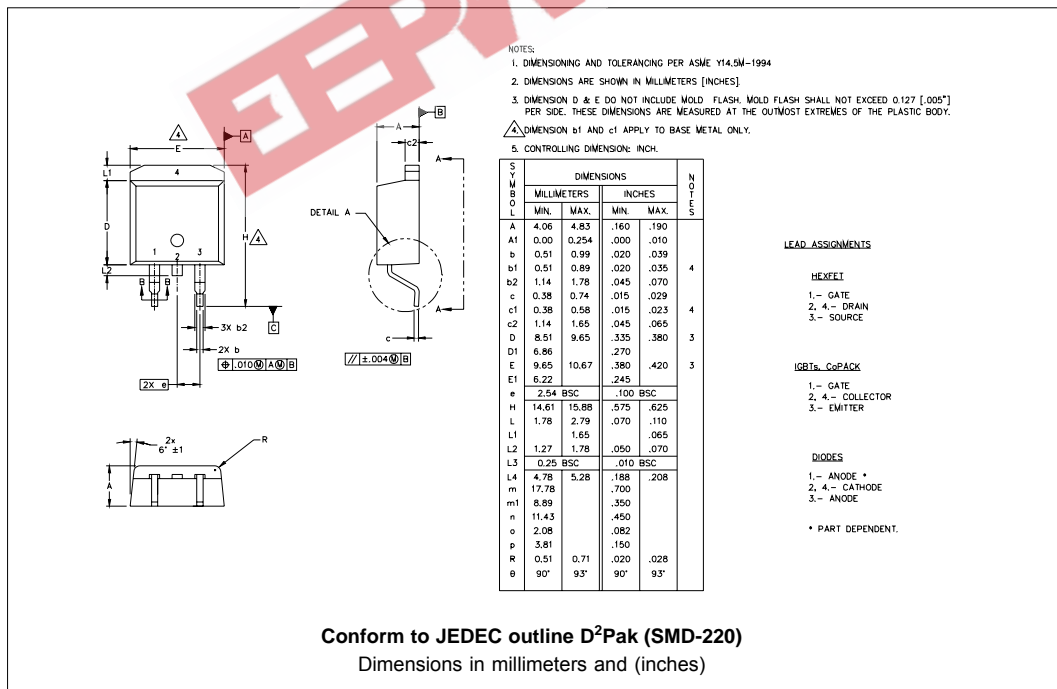
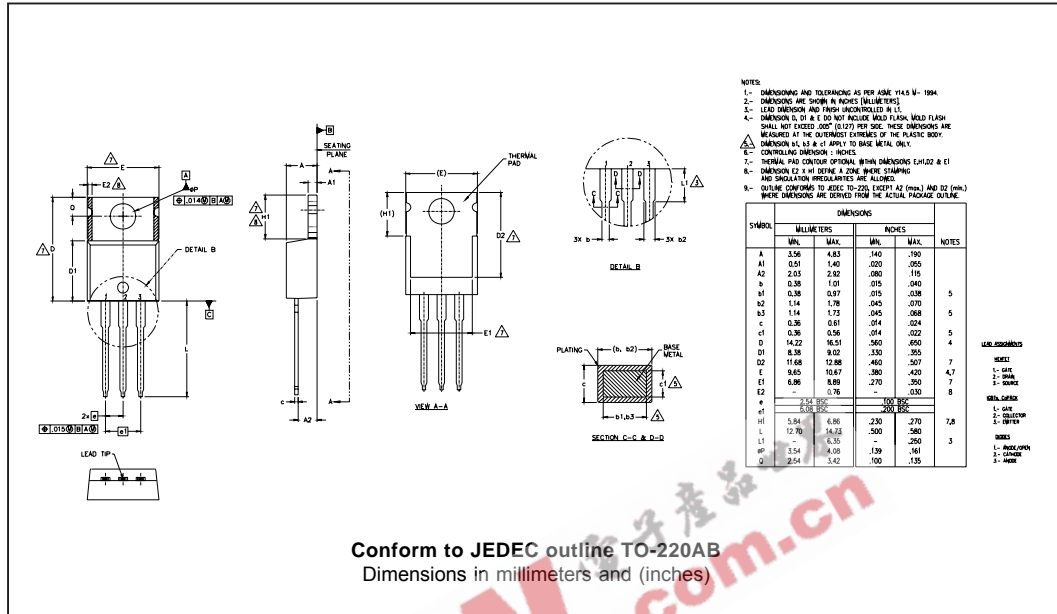


Fig. 7 - Max. Non-Repitative Surge Current (Per Leg)

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

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

Outline Table



Part Marking Information

TO-220AB

EXAMPLE: THIS IS A STPS30L30CT
LOT CODE 1789
ASSEMBLED ON WW 19, 2003
IN THE ASSEMBLY LINE "C"

INTERNATIONAL
RECTIFIER
LOGO

ASSEMBLY
LOT CODE

PART NUMBER

DATE CODE
YEAR 3 = 2003
WEEK 19
LINE C

D²Pak

EXAMPLE: THIS IS A STPS30L30CG
LOT CODE 8024
ASSEMBLED ON WW 02, 2000

INTERNATIONAL
RECTIFIER
LOGO

ASSEMBLY
LOT CODE

PART NUMBER

DATE CODE
YEAR 0 = 2000
WEEK 02
LINE C

Tape & Reel Information

SECTION Y-Y

A ₀	10.50	+/- 0.1
B ₀	15.80	+/- 0.1
B ₂	10.25	+/- 0.1
K ₀	4.90	+/- 0.1
F	11.50	+/- 0.1
P ₁	16.00	+/- 0.1
W	24.00	+/- 0.3

NOTES:

- 1.0 10 SPROCKET HOLE PITH CUMULATIVE TOLERANCE ±.02
- 2.0 CAMBER NOT TO EXCEED 1mm in 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 K₀ MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 5.0 MEASURED FROM CENTRELINE OF SPROCKET HOLE TO CENTRELINE OF POCKET
- 6.0 VENDOR: (OPTIONAL)
- 7.0 MUST ALSO MEET REQUIREMENTS OF EIA STANDAR #EIA-481A TAPING OF SURFACE MOUNT COMPONENTS FOR AUTOMATIC PLACEMENT
- 8.0 SURFACE RESISTIVITY OF MOLDED MATL. MUST MEASURE LESS OR EQUAL TO 10⁶ OHMS PER SQUARE. MEASURED IN ACCORDANCE TO PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

Dimensions in millimeters and (inches)

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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 paralalled VCG2T
*****
.SUBCKT 30I30ct 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 30I30ct

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

R THERM1 5 4 3.15E-1
R THERM2 4 3 6.15E-1
R THERM1 3 2 3.7E-1
R THERM1 2 1 1.98E-1

.ENDS 30L30CT

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Ordering Information Table

Device Code	
	STPS 30 L 30 C G TRL -
	① ② ③ ④ ⑤ ⑥ ⑦ ⑧
1	- Essential Part Number
2	- Current Rating (30A)
3	- L = Low Voltage
4	- Voltage Rating (30 = 30V)
5	- C = Common cathode
6	- <ul style="list-style-type: none"> • G = D²Pak package • T = TO-220
7	- <ul style="list-style-type: none"> • none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D²Pak only) • TRR = Tape & Reel (Right Oriented - for D²Pak only)
8	- <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free (for D²Pak tube) • P = Lead-Free (for D²Pak TRR and TRL)

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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