Bulletin PD-20555 rev. B 02/03

International
IOR Rectifier

30L30CT
30L30CTS
30L30CT-1

SCHOTTKY RECTIFIER

30 Amp

Major Ratings and Characteristics

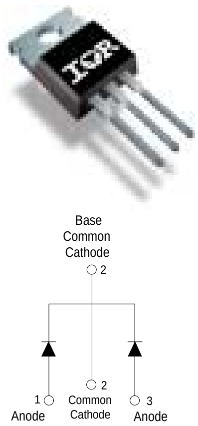
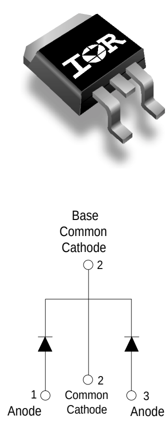
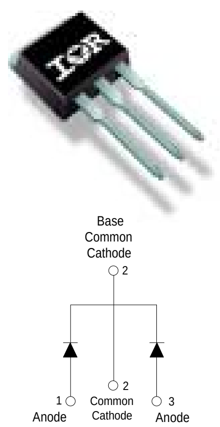
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	2 x 15	A
V_{RRM}	30	V
V_F @ 15 Apk, T_J = 125°C (Per Leg)	0.37	V
T_J range	- 55 to 150	°C

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

30L30CT	30L30CTS	30L30CT -1
 TO-220	 D^2PAK	 TO-262

Voltage Ratings

	Parameters	30L30CT 30L30CTS 30L30CT-1
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°C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current		1450	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
			220		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)		15	mJ	T_J = 25 °C, I_{AS} = 2 Amps, L = 7.5 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 x 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 °C
		0.57	V	@ 30A	
		0.37	V	@ 15A	T_J = 125 °C
		0.50	V	@ 30A	
I_{RM}	Max. Reverse Leakage Current (Per Leg)	1.50	mA	T_J = 25 °C	V_R = rated V_R
		350	mA	T_J = 125 °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	10000	V/µs	(Rated V_R)	

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

Thermal-Mechanical Specifications

	Parameters		Values	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		1.5	°C/W	DC operation
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.8	°C/W	DC operation
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (Ibf-in)	
		Max.	12 (10)		

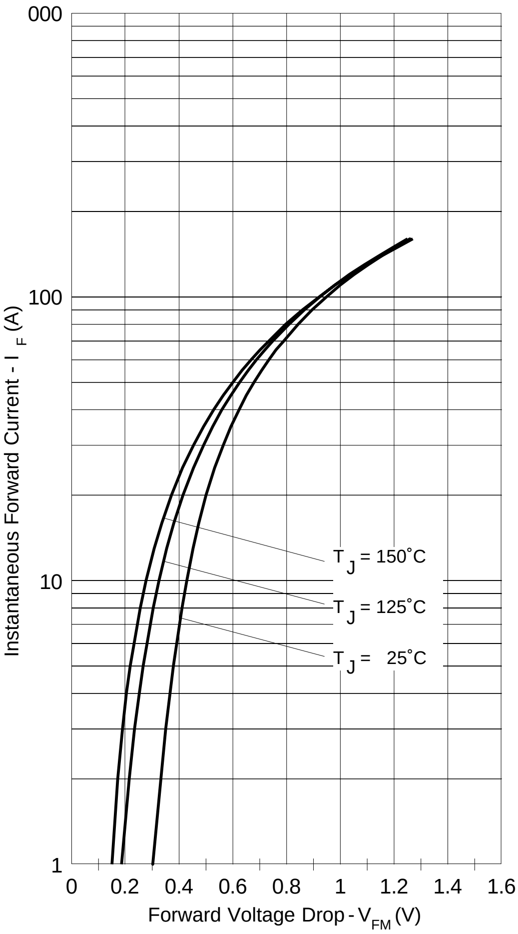


Fig. 1 - Maximum Forward Voltage Drop Characteristics

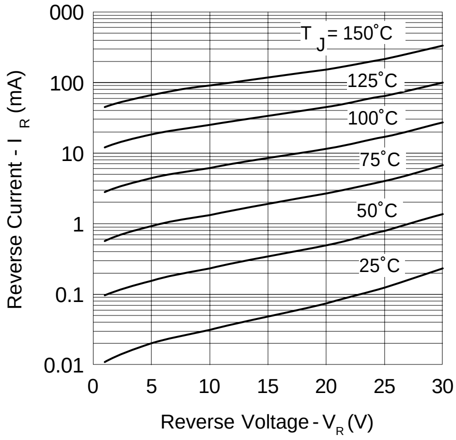


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

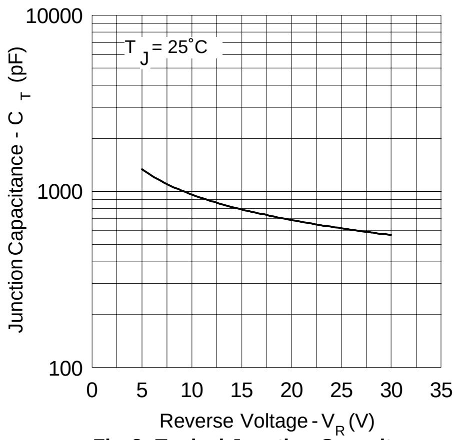


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

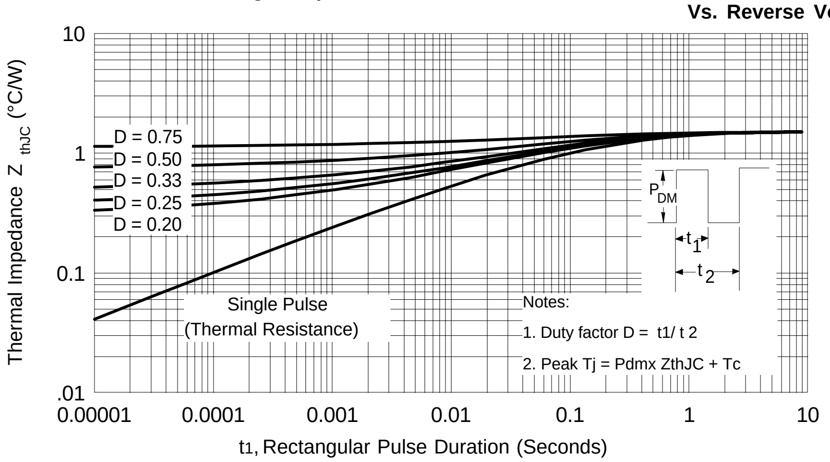


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

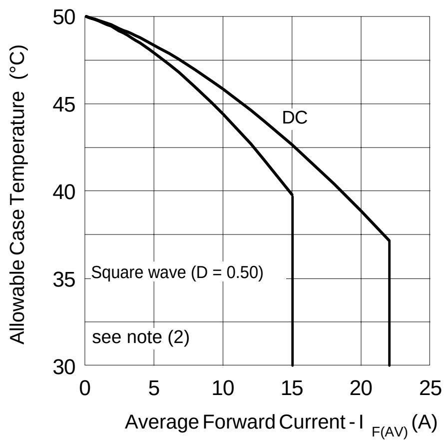


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

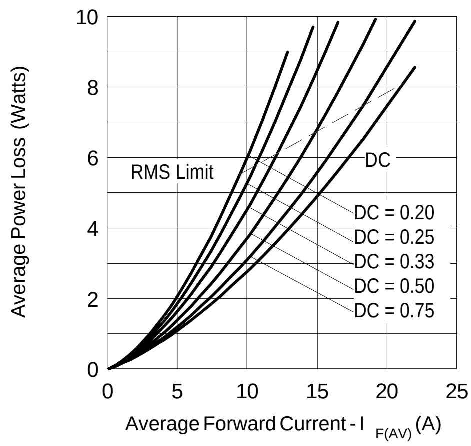


Fig. 6 - Forward Power Loss Characteristics

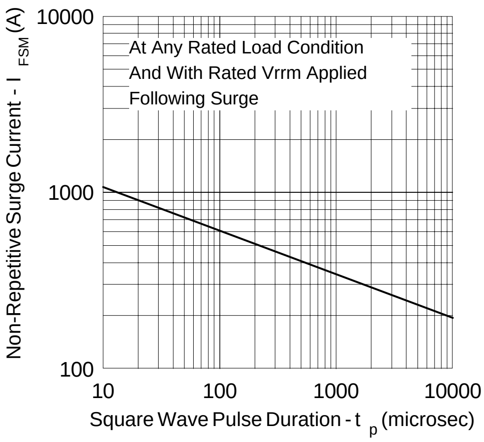
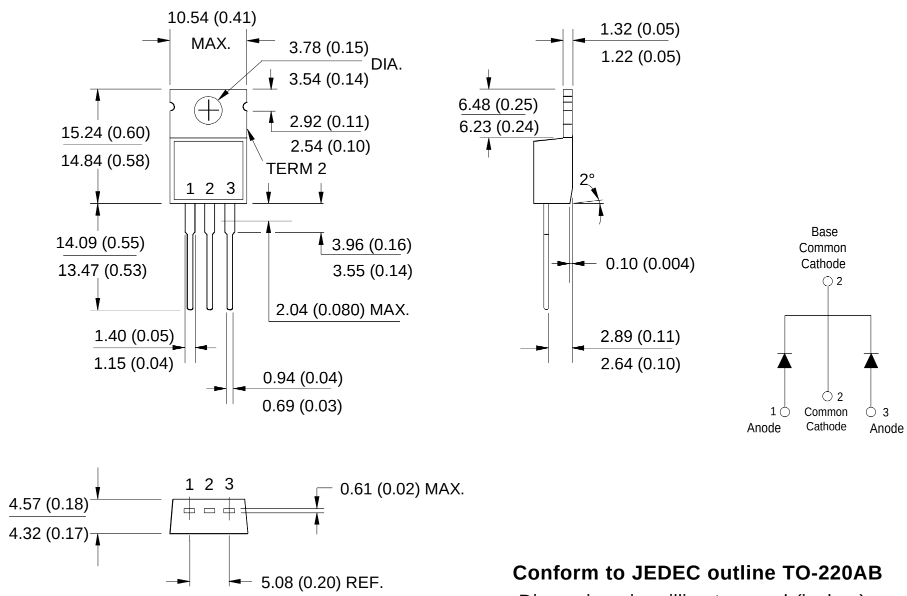


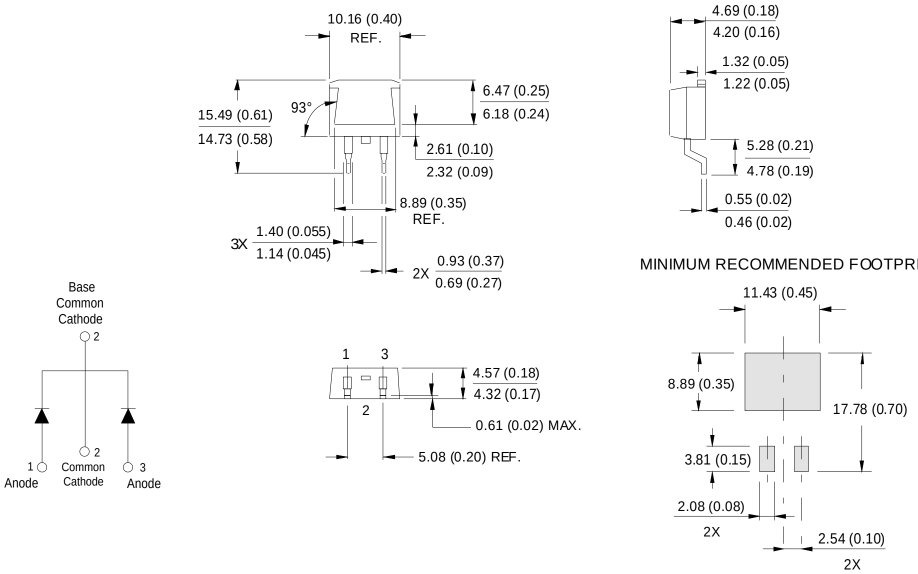
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(2) Formula used: $T_C = T_J - Pd \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ $(I_{F(AV)} / D)$ (see Fig. 6)

Outline Table

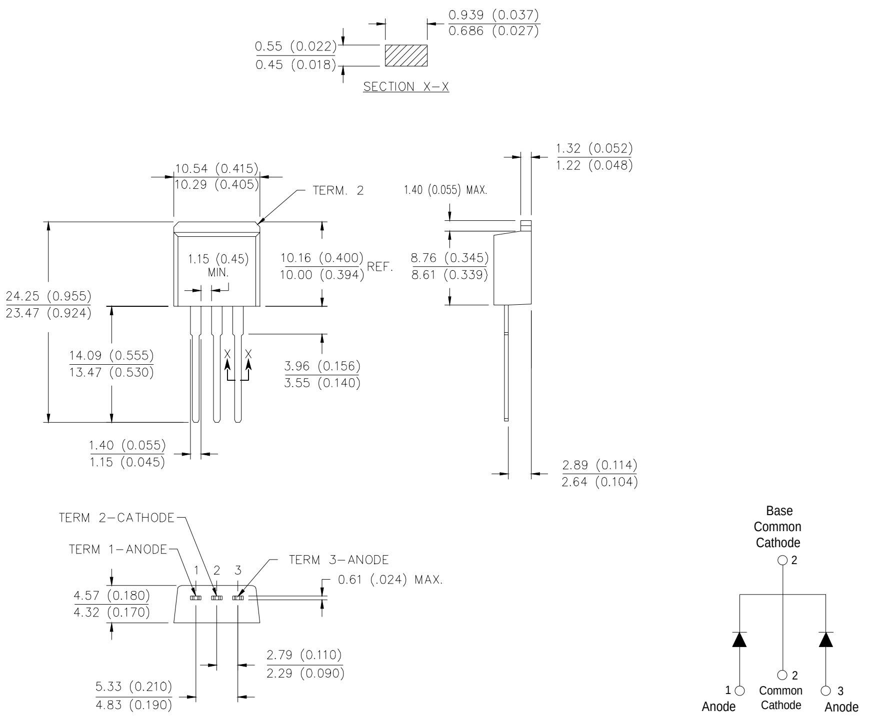


Conform to JEDEC outline TO-220AB
Dimensions in millimeters and (inches)



Conform to JEDEC outline D^2Pak (SMD-220)
Dimensions in millimeters and (inches)

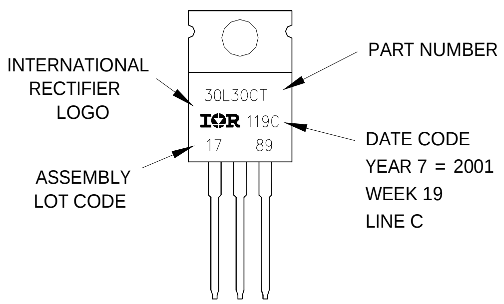
Outline Table



Modified JEDEC outline TO-262
Dimensions in millimeters and (inches)

Marking Information

EXAMPLE: THIS IS A 30L30CT
LOT CODE 1789
ASSEMBLED ON WW 19, 2001
IN THE ASSEMBLY LINE "C"



```
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 paralled 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
```

Ordering Information Table

Device Code

30	L	30	C	T	-1
1	2	3	4	5	6

1 - 30 = Current Rating
2 - L = Schottky - L Series
3 - 30= Voltage Rating
4 - C = Common Cathode
5 - T = TO-220
6 - 1 = TO-262
S = D^2Pak

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 IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 02 /03