Bulletin PD-20332 rev. B 01/04

International
IOR Rectifier

30CTQ045
30CTQ045S
30CTQ045 -1

SCHOTTKY RECTIFIER

30 Amp

$I_{F(AV)}$ = 30Amp
V_R = 35 to 45V

Major Ratings and Characteristics

Characteristics	30CTQ	Units
$I_{F(AV)}$ Rectangular waveform	30	A
V_{RRM}	35 to 45	V
I_{FSM} @tp = 5 µs sine	1060	A
V_F @15 Apk, T_J = 125°C (per leg)	0.56	V
T_J	- 55 to 175	°C

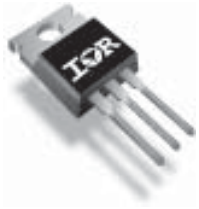
Description/ Features

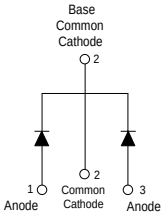
The 30CTQ... center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175° C T_J operation
- Center tap TO-220 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles

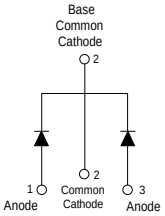
30CTQ...





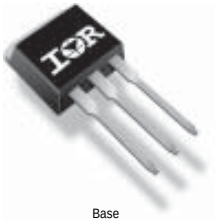
TO-220

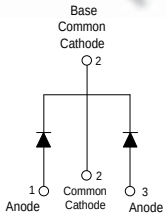
30CTQ... S



D²PAK

30CTQ... -1





TO-262

Voltage Ratings

Part number		30CTQ035	30CTQ040	30CTQ045
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters		30CTQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	30	A	50% duty cycle @ T_C = 127°C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	1060	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		265		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	20	mJ	T_J = 25 °C, I_{AS} = 3.0 Amps, L = 4.40 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	3.0	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		30CTQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.62	V	@ 15A	T_J = 25 °C
		0.76	V	@ 30A	
		0.56	V	@ 15A	T_J = 125 °C
		0.70	V	@ 30A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	2	mA	T_J = 25 °C	V_R = rated V_R
		15	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	900	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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters			30CTQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 175	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		3.25	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		1.63	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.50	°C/W	Mounting surface , smooth and greased
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	
		Max.	12 (10)		

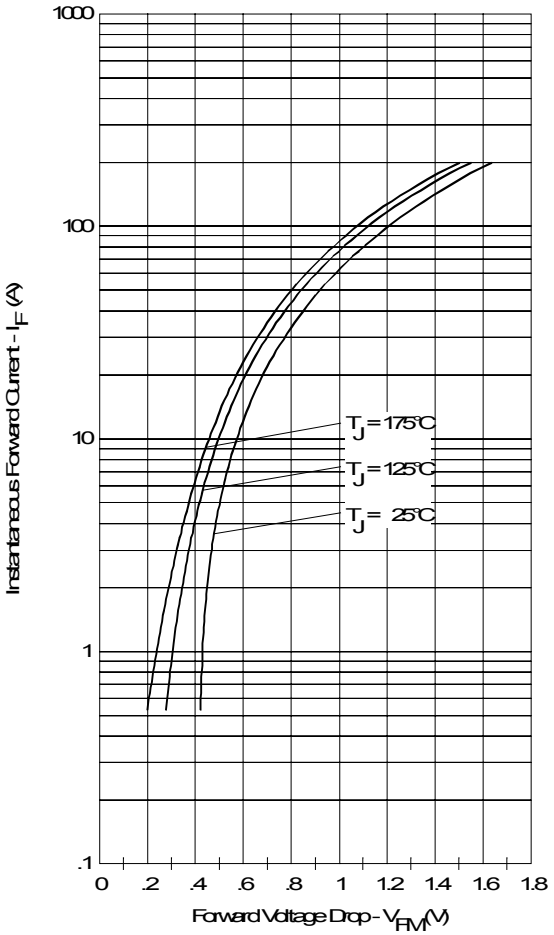


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

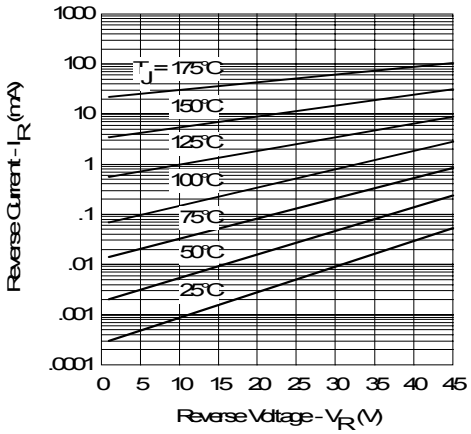


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

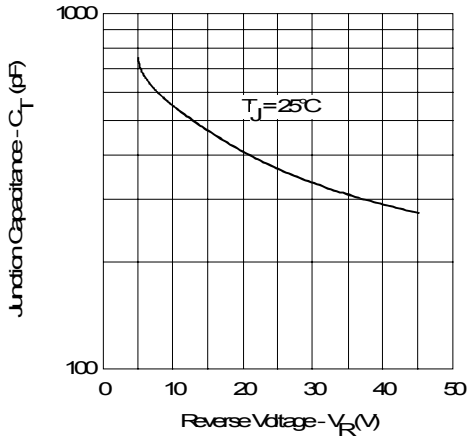


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

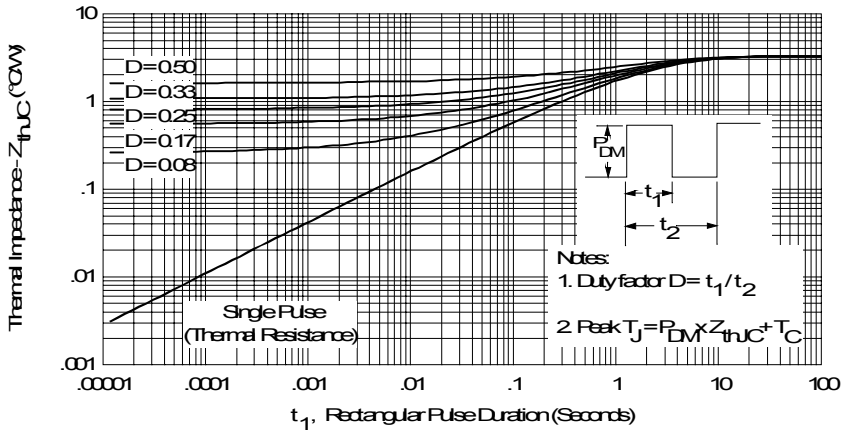


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

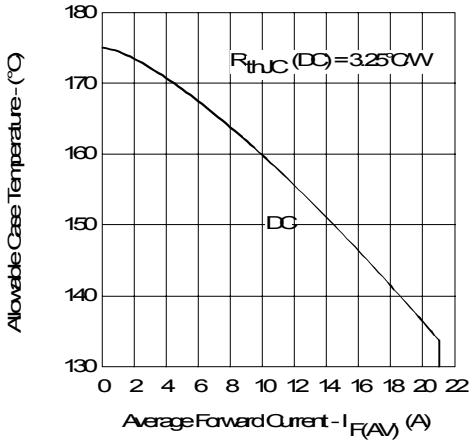


Fig. 5 - Max. Allowable Case Temperature
Vs. Average Forward Current (Per Leg)

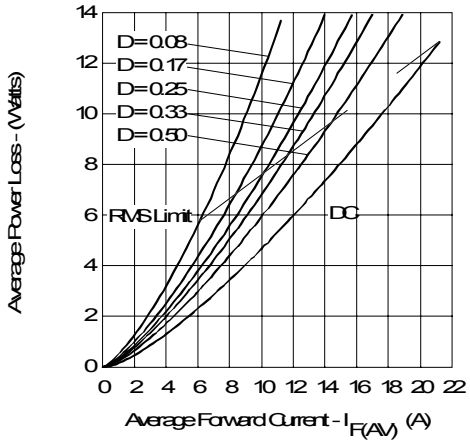


Fig. 6 - Forward Power Loss Characteristics
(Per Leg)

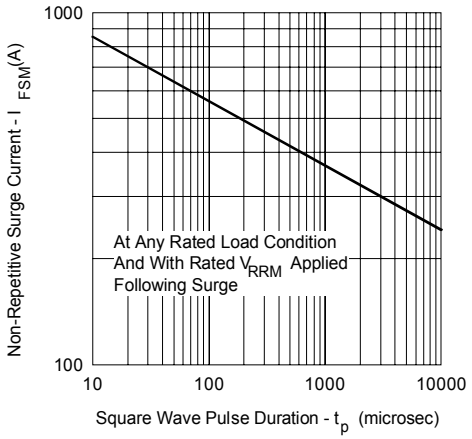


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

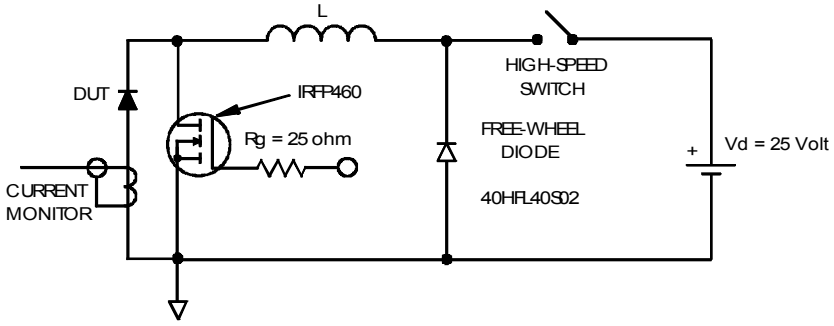
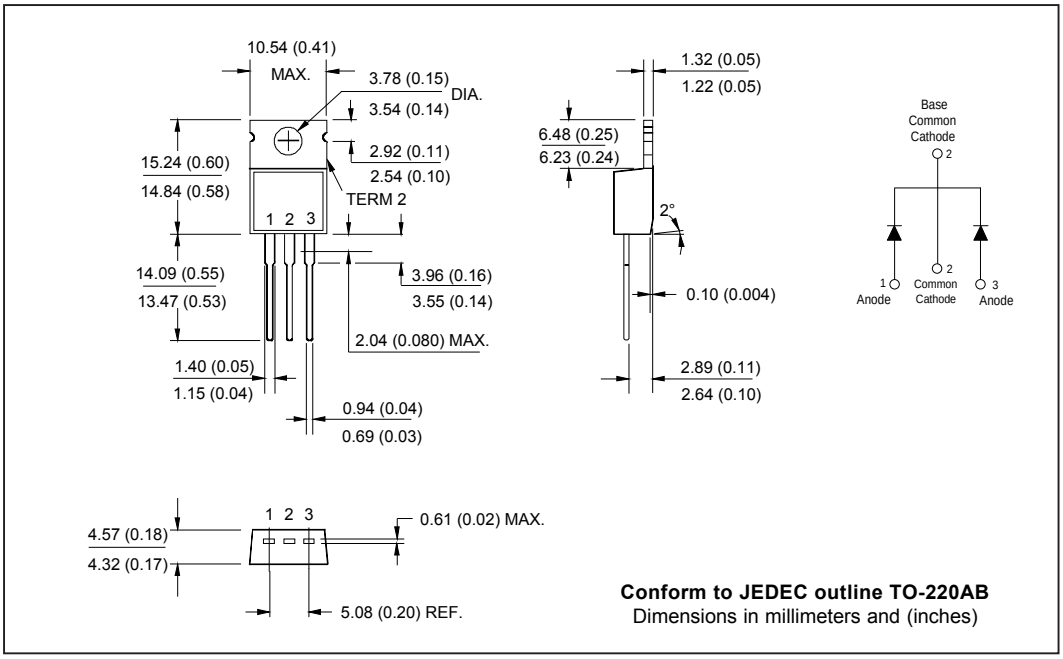
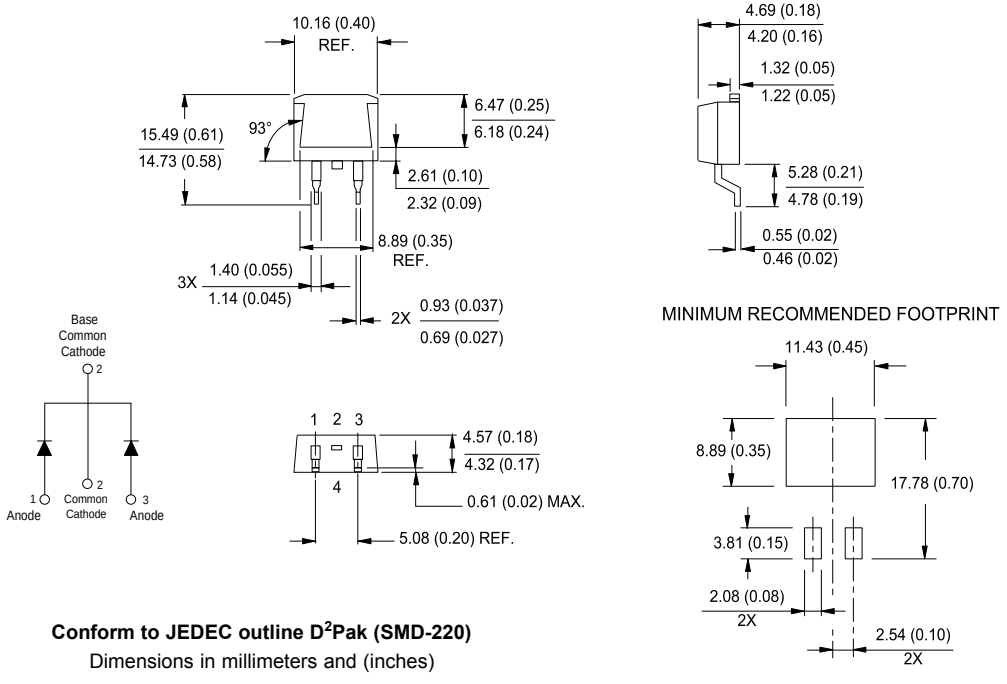


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



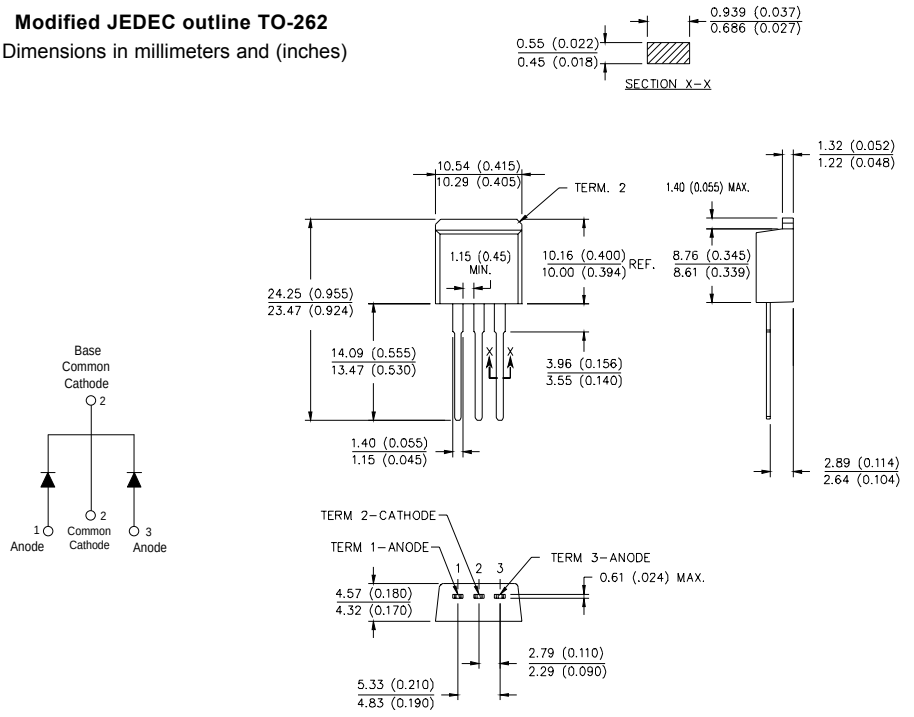
Conform to JEDEC outline TO-220AB
Dimensions in millimeters and (inches)



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

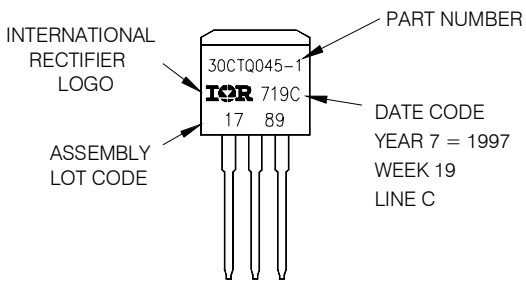
Outline Table

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

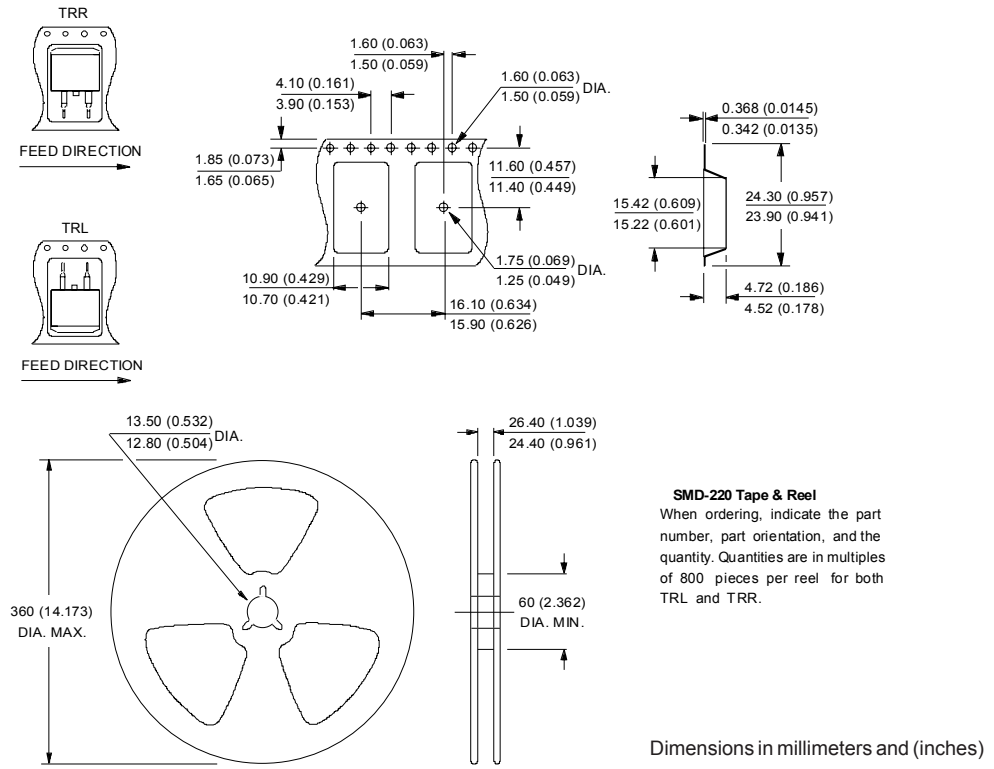


Marking Information

EXAMPLE: THIS IS A 30CTQ045-1
LOT CODE 1789
ASSEMBLED ON WW 19, 1997
IN THE ASSEMBLY LINE "C"



Tape & Reel Information



SMD-220 Tape & Reel
When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 800 pieces per reel for both TRL and TRR.

Dimensions in millimeters and (inches)

Ordering Information Table

Device Code

30	C	T	Q	045	-1
(1)	(2)	(3)	(4)	(5)	(6)

1 - Essential Part Number
2 - Common Cathode
3 - T = TO-220
4 - Q = Schottky Q Series
5 - Voltage Rating
6 - S = D^2Pak
- -1 = TO-262

035 = 35V
040 = 40V
045 = 45V

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

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