



20CTQ150
20CTQ150S
20CTQ150-1

SCHOTTKY RECTIFIER

20 Amp


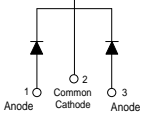

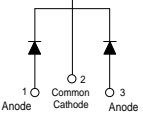

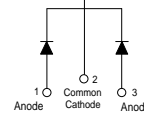
Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	20	A
V_{RRM}	150	V
I_{FSM} @ $t_p = 5 \mu s$ sine	1030	A
V_F @ 10 Apk, $T_J = 125^\circ C$ (per leg)	0.66	V
T_J range	-55 to 175	$^\circ C$

Description/ Features

This center tap Schottky ectifier has been optimized for low reverse leakage at high temperature. 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 configuration
- 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		
<p>20CTQ150</p>  <p>Base Common Cathode O 2</p>  <p>1 O Anode O 2 Common Cathode O 3 Anode</p> <p>TO-220AB</p>	<p>20CTQ150S</p>  <p>Base Common Cathode O 2</p>  <p>1 O Anode O 2 Common Cathode O 3 Anode</p> <p>D²PAK</p>	<p>20CTQ150-1</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

Parameters	20CTQ150 20CTQ150S 20CTQ150-1
V_R Max. DC Reverse Voltage (V)	150
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device)	10	A	50% duty cycle @ $T_C = 154^\circ\text{C}$, rectangular wave form
	20		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	1030	A	5 μs Sine or 3 μs Rect. pulse
	180		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	2.45	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.7$ Amps, $L = 10$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	0.7	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	Typ.	Max.	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1	0.80	0.88	V	@ 10A
	0.90	1.0	V	@ 20A
	0.63	0.66	V	@ 10A
	0.73	0.77	V	@ 20A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2	3.0	25	μA	$T_J = 25^\circ\text{C}$
	2.7	5.0	mA	$T_J = 125^\circ\text{C}$
C_T Typical Junction Capacitance (Per Leg)	-	280	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 < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	2.0	$^\circ\text{C}/\text{W}$	DC operation
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	1.0	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.50	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased (only for TO-220)
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	
Marking Device	20CTQ150	Case style TO-220	
	20CTQ150S	Case style D ² -Pak	
	20CTQ150-1	Case style TO-262	

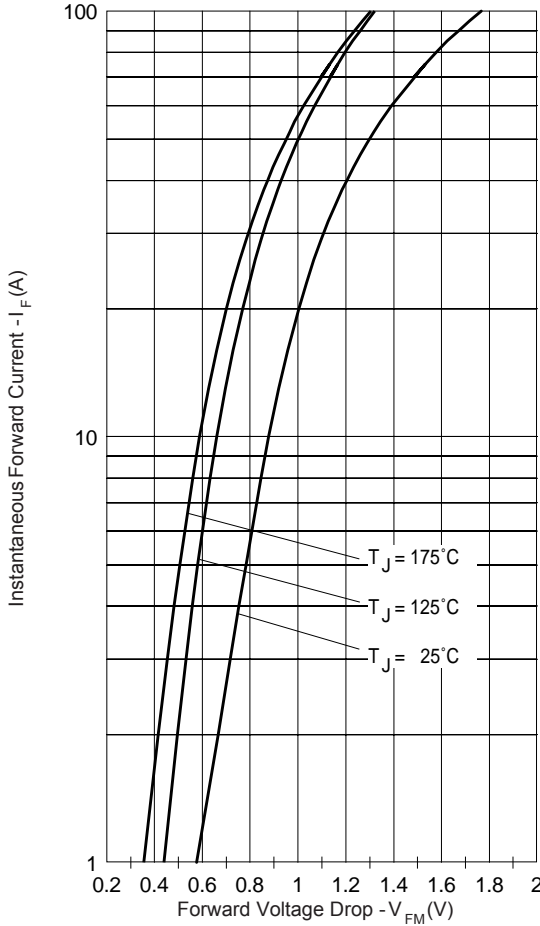


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

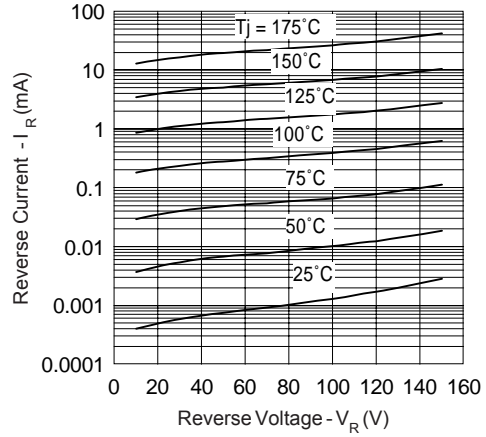


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

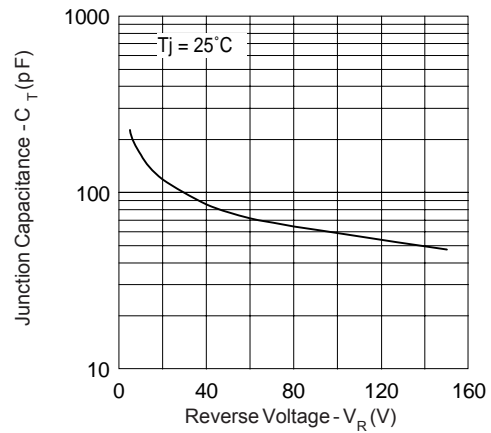


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

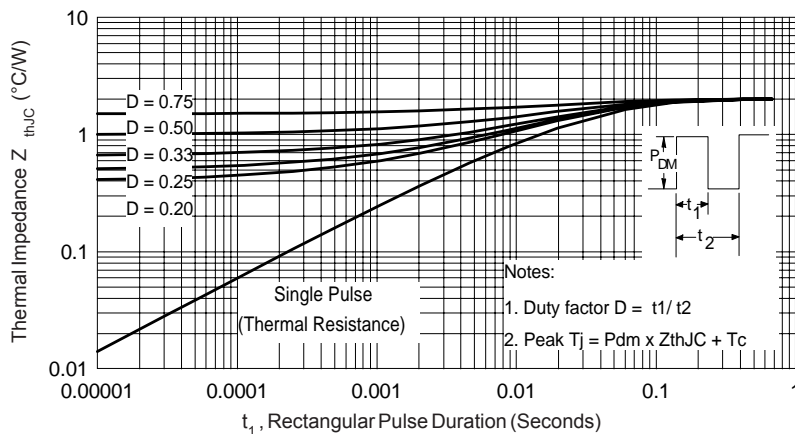


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

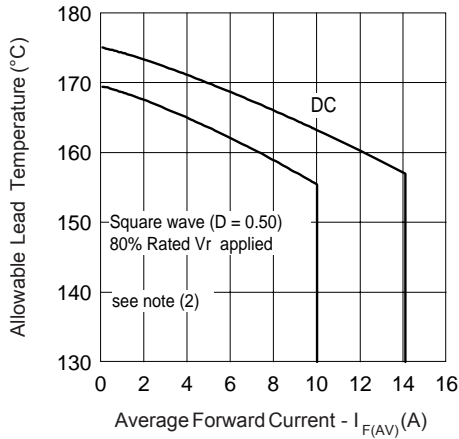


Fig. 5 - Maximum Average Forward Current Vs. Allowable Lead Temperature

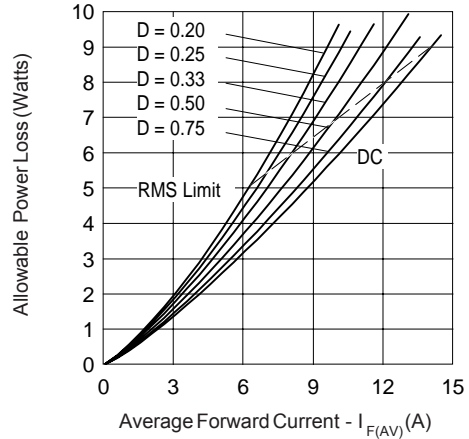


Fig. 6 - Maximum Average Forward Dissipation Vs. Average Forward Current

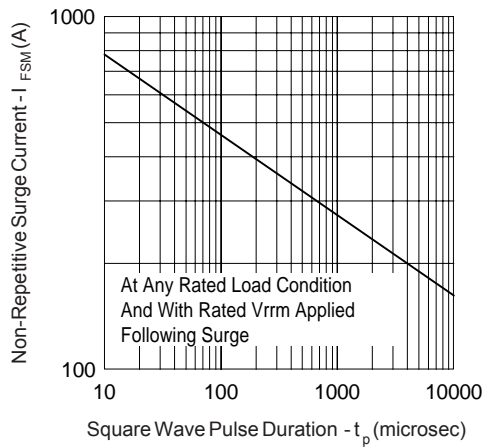


Fig. 7 - Maximum Peak Surge Forward Current Vs. Pulse Duration

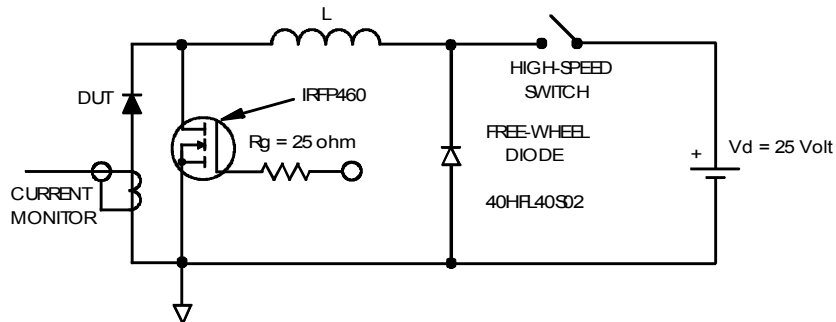
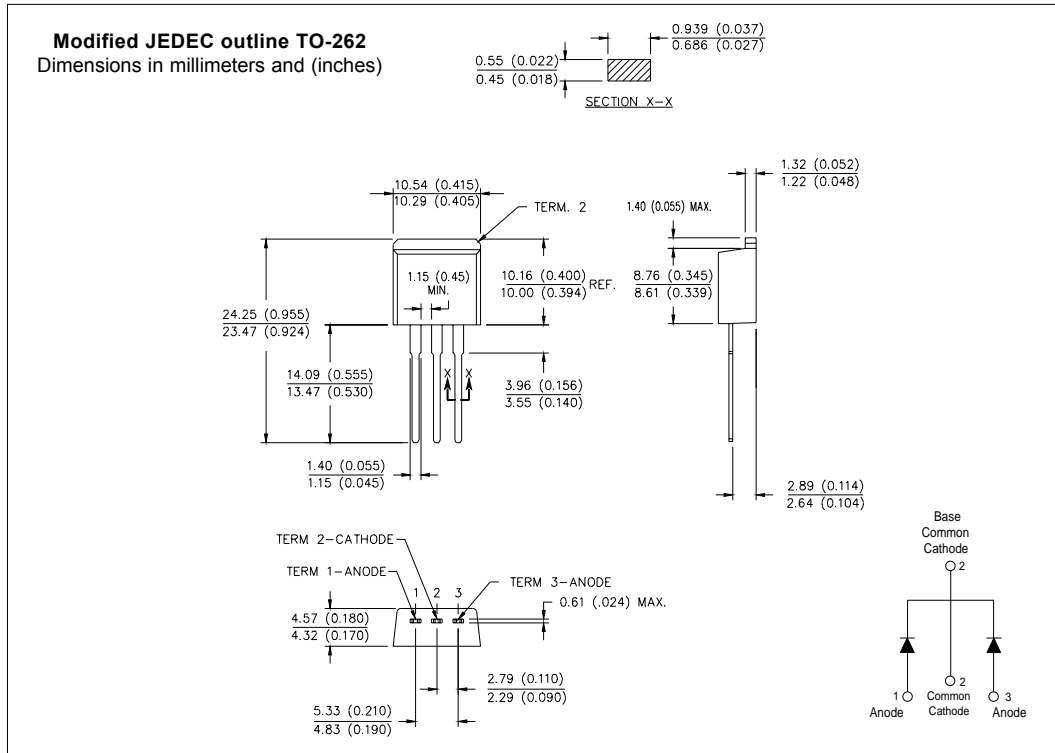
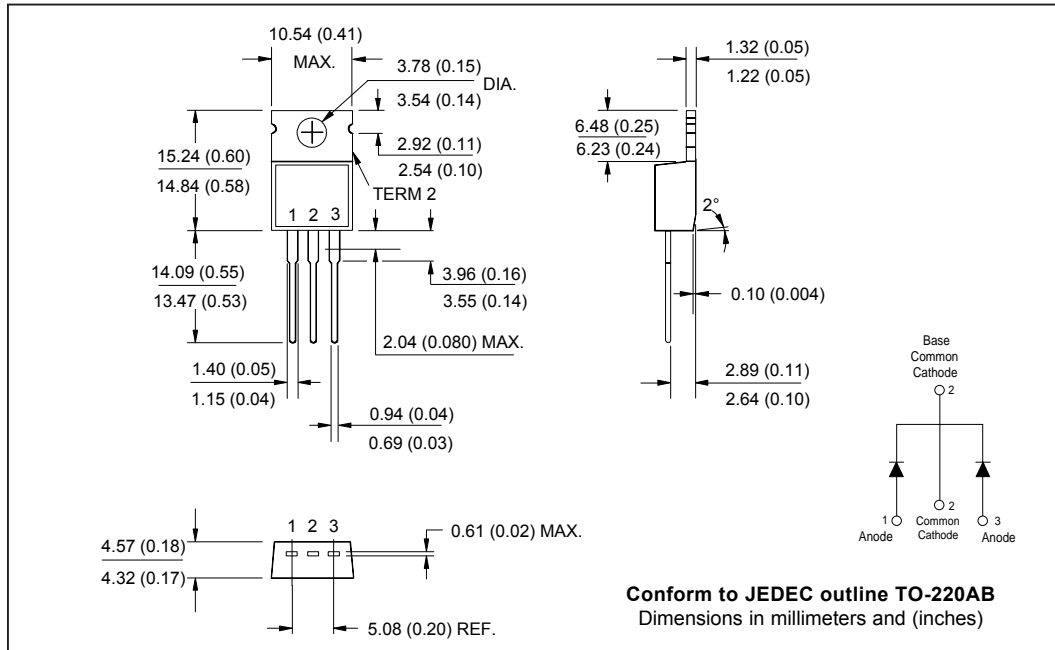


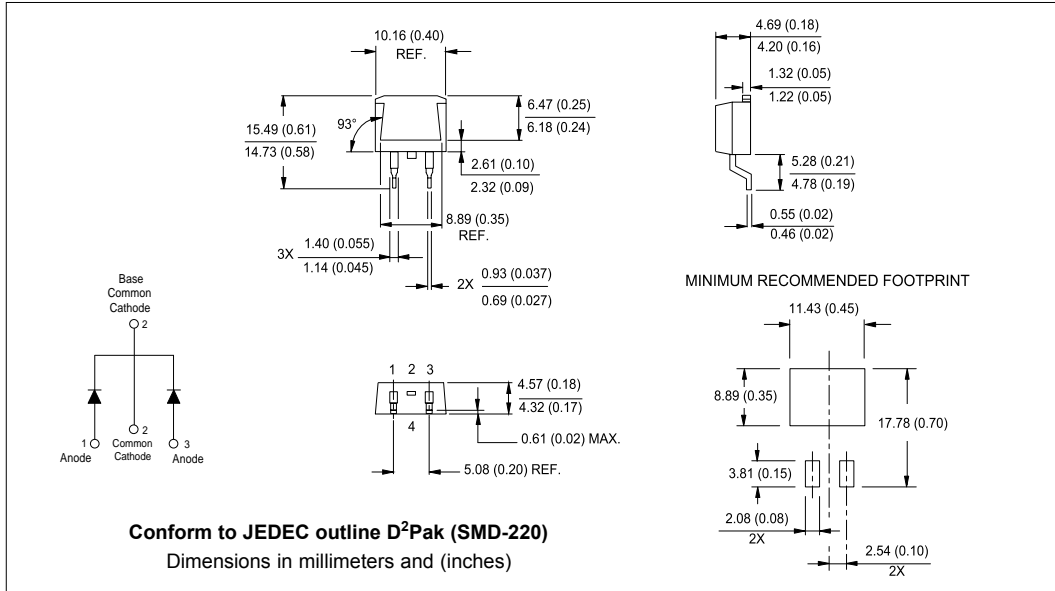
Fig. 8 - Unclamped Inductive Test Circuit

- (2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

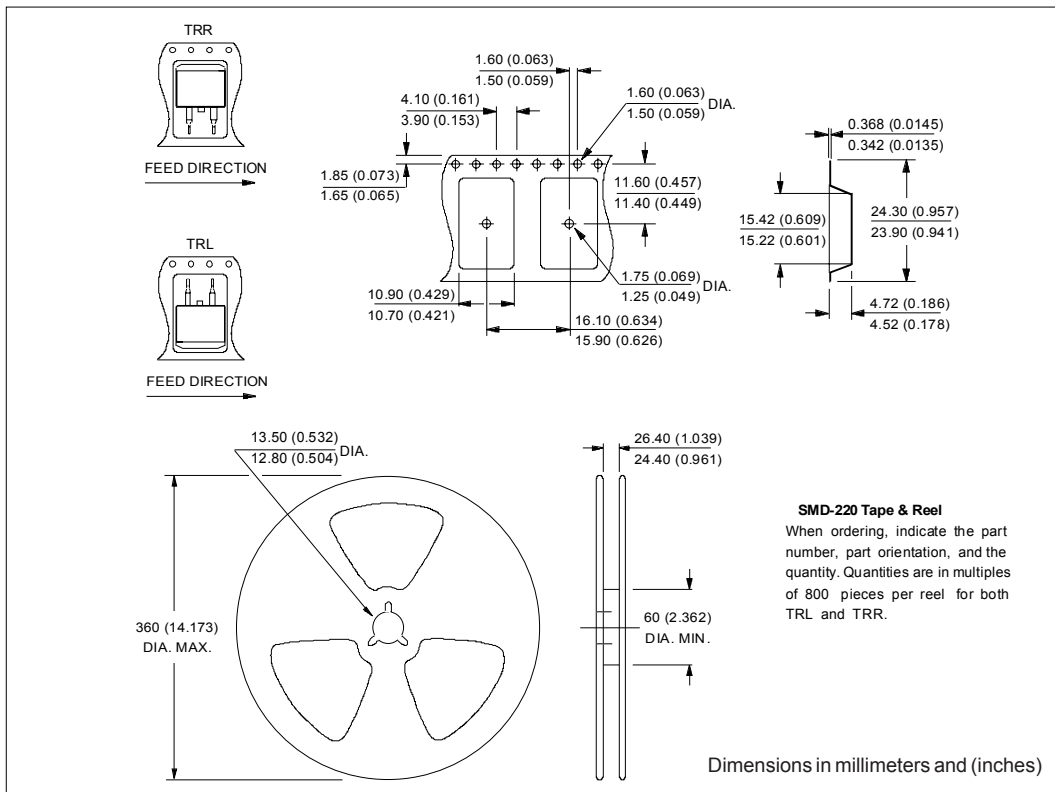
Outline Table



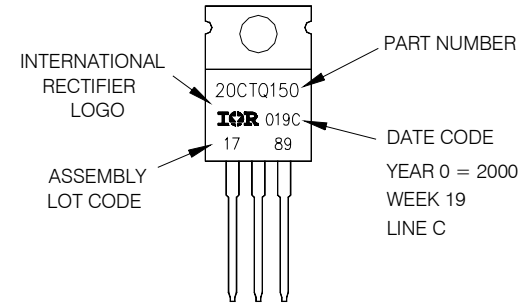
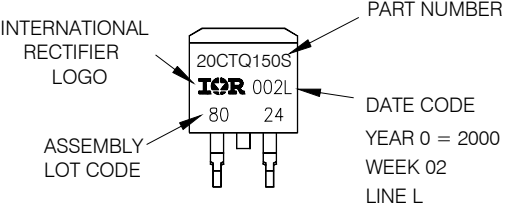
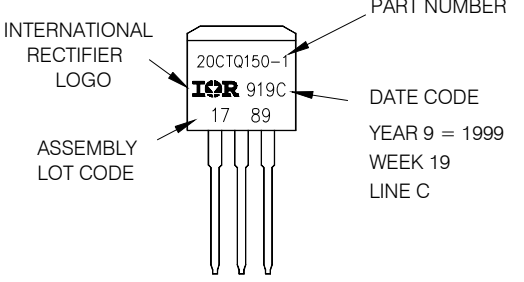
Outline Table



Tape & Reel Information



Part Marking Information

<p>EXAMPLE: THIS IS A 20CTQ150 LOT CODE 1789 ASSEMBLED ON WW 19, 2000 IN THE ASSEMBLY LINE "C"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>20CTQ150</p> <p>IR 019C</p> <p>17 89</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 0 = 2000 WEEK 19 LINE C</p> <p>ASSEMBLY LOT CODE</p>
<p>TO-220</p>	
<p>EXAMPLE: THIS IS A 20CTQ150S LOT CODE 8024 ASSEMBLED ON WW 02, 2000 IN THE ASSEMBLY LINE "L"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>20CTQ150S</p> <p>IR 002L</p> <p>80 24</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 0 = 2000 WEEK 02 LINE L</p> <p>ASSEMBLY LOT CODE</p>
<p>D²PAK</p>	
<p>EXAMPLE: THIS IS A 20CTQ150-1 LOT CODE 1789 ASSEMBLED ON WW 19, 1999 IN THE ASSEMBLY LINE "C"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>20CTQ150-1</p> <p>IR 919C</p> <p>17 89</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 9 = 1999 WEEK 19 LINE C</p> <p>ASSEMBLY LOT CODE</p>
<p>TO-262</p>	

Ordering Information Table

Device Code	
20	C
1	2
T	Q
3	4
150	S
5	6
TRL	-
7	8
1	- Current Rating (20 = 20A)
2	- C = Common Cathode
3	- T = TO-220
4	- Q = Schottky Q Series
5	- Voltage Rating (150 = 150V)
6	- <ul style="list-style-type: none"> • none = TO-220AB • -1 = TO-262 • S = D²Pak
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

Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

This datasheet has been downloaded from:

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Datasheets for electronic components.