

Technical Data  
Data Sheet 2907, Rev. -

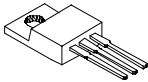
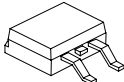
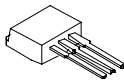
## 47CTQ020/47CTQ020S/47CTQ020-1 SCHOTTKY RECTIFIER

### Applications:

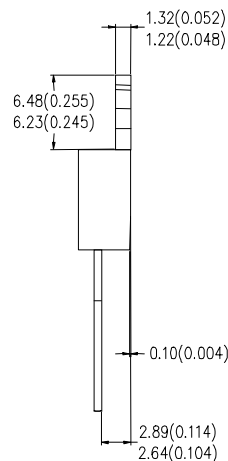
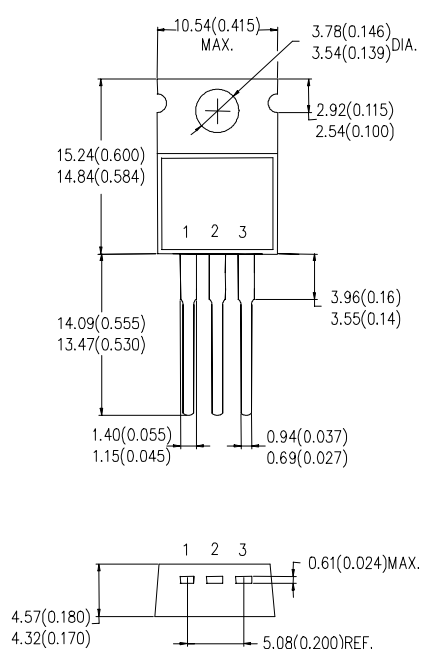
- Parallel switching power supply • Converters • Free-Wheeling diodes
- Reverse battery protection

### Features:

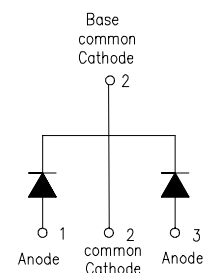
- 150 °C T<sub>J</sub> operation
- Center tap configuration
- Optimized for 3.3V application
- Ultra Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles		
47CTQ020	47CTQ020S	47CTQ020-1
		
TO-220AB	D <sup>2</sup> PAK	TO-262

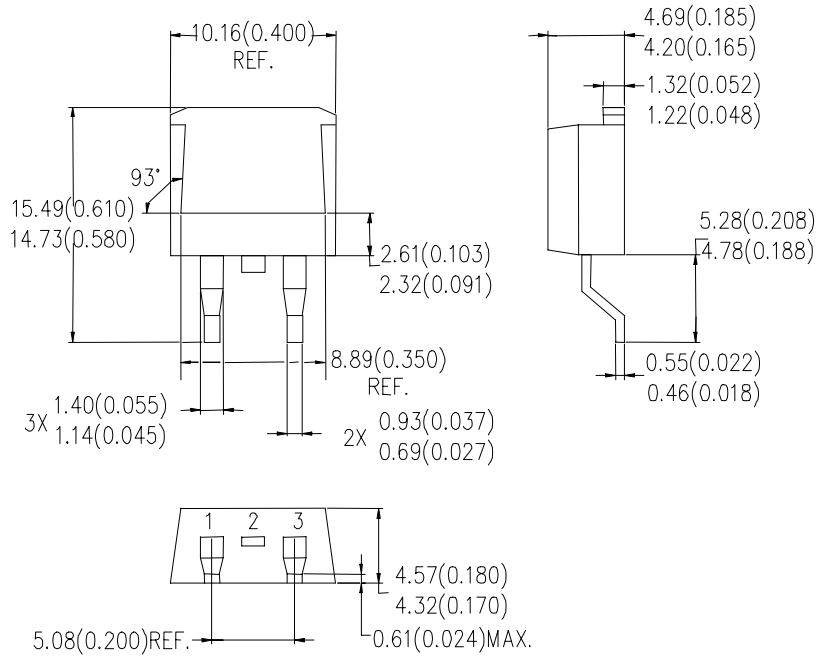
Mechanical Dimensions: In Inches / mm



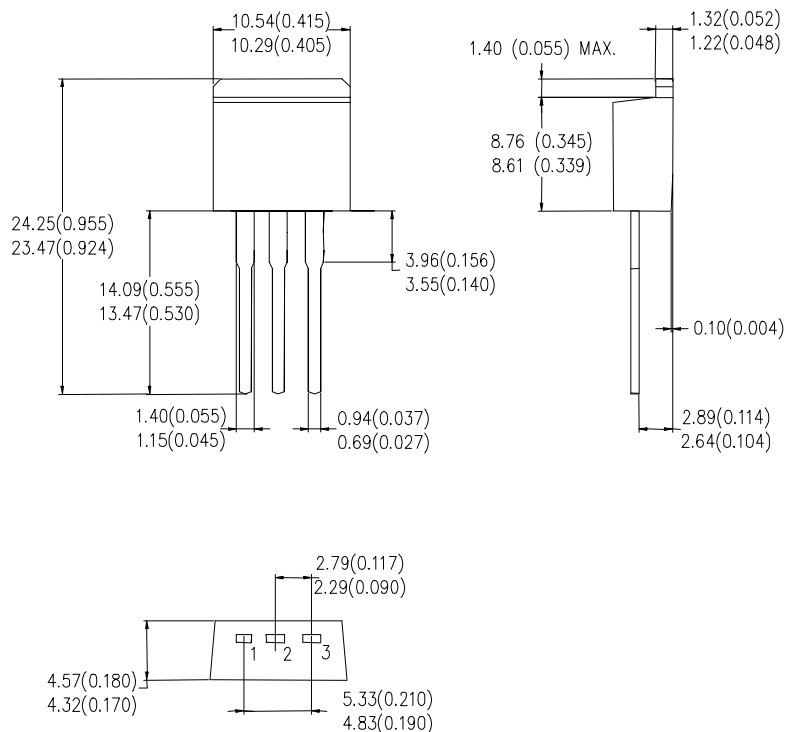
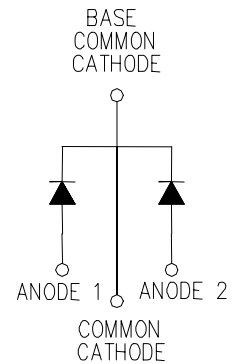
TO-220AB



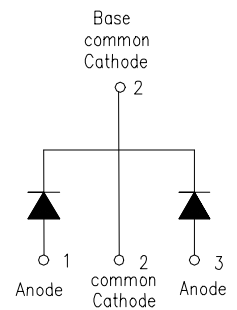
Data Sheet 2907, Rev. -



**D<sup>2</sup>PAK**



**TO-262**



Data Sheet 2907, Rev. -

**Maximum Ratings:**

Characteristics	Symbol	Condition	Max.	Units
Peak Inverse Voltage	$V_{RWM}$	-	20 10	@ 125 °C @ 150 °C V
Max. Average Forward Current	$I_{F(AV)}$	50% duty cycle @ $T_C = 135$ °C, rectangular wave form	20 (per leg) 40 (per device)	A
Max. Peak One Cycle Non-Repetitive Surge Current (per leg)	$I_{FSM}$	8.3 ms, half Sine pulse	300	A
Non-Repetitive Avalanche Energy (per leg)	$E_{AS}$	$T_J = 25$ °C, $I_{AS} = 3$ A, $L = 3$ mH	18	mJ
Repetitive Avalanche Current (per leg)	$I_{AR}$	Current decaying linearly to zero in 1 $\mu$ sec Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical	3	A

**Electrical Characteristics:**

Characteristics	Symbol	Condition	Max.	Units
Max. Forward Voltage Drop (per leg) *	$V_{F1}$	@ 20A, Pulse, $T_J = 25$ °C @ 40A, Pulse, $T_J = 25$ °C	0.45 0.51	V
	$V_{F2}$	@ 20A, Pulse, $T_J = 125$ °C @ 40A, Pulse, $T_J = 125$ °C	0.34 0.44	V
	$V_{F3}$	@ 20A, Pulse, $T_J = 150$ °C @ 40A, Pulse, $T_J = 150$ °C	0.31 0.42	V
Max. Reverse Current (per leg) *	$I_{R1}$	@ $V_R =$ rated $V_R$ , $T_J = 25$ °C	3	mA
	$I_{R2}$	@ $V_R =$ rated $V_R$ , $T_J = 125$ °C	310	mA
	$I_{R3}$	@ $V_R = 5$ V, $T_J = 125$ °C	60	mA
	$I_{R4}$	@ $V_R = 3.3$ V, $T_J = 125$ °C	45	mA
	$I_{R5}$	@ $V_R = 10$ V, $T_J = 150$ °C	306	mA
Max. Junction Capacitance (per leg)	$C_T$	@ $V_R = 5$ V, $T_C = 25$ °C $f_{SIG} = 1$ MHz	3000	pF
Typical Series Inductance (per leg)	$L_S$	Measured lead to lead 5 mm from package body	5.5	nH
Max. Voltage Rate of Change	$dv/dt$	-	10,000	V/ $\mu$ s

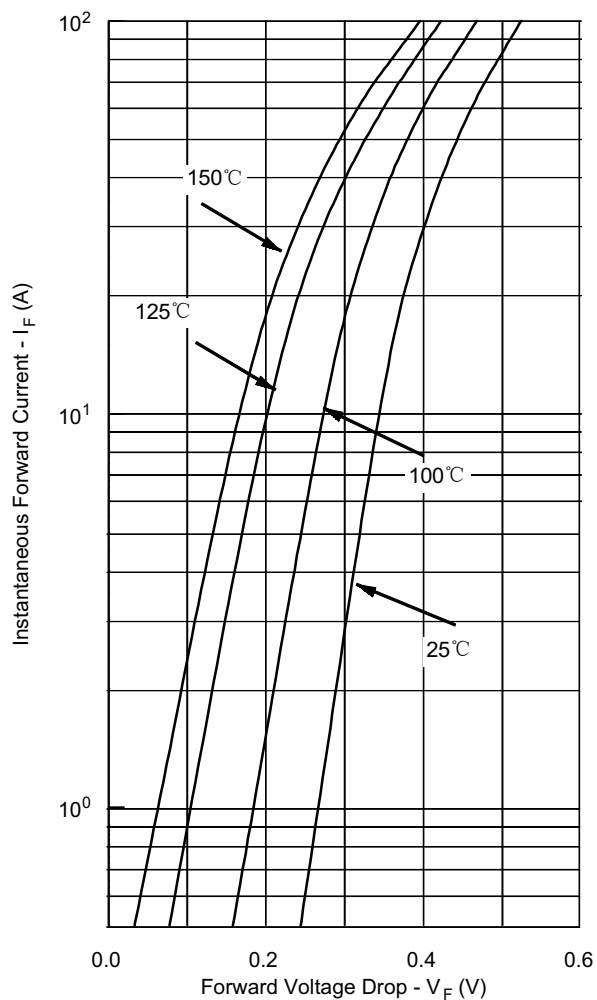
\* Pulse Width < 300 $\mu$ s, Duty Cycle <2%

**Thermal-Mechanical Specifications:**

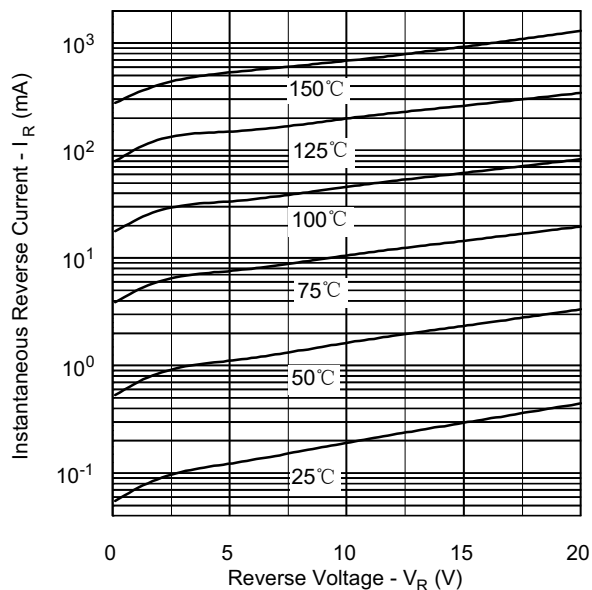
Characteristics	Symbol	Condition	Specification	Units
Max. Junction Temperature	$T_J$	-	-55 to +150	°C
Max. Storage Temperature	$T_{stg}$	-	-55 to +150	°C
Maximum Thermal Resistance Junction to Case (per leg)	$R_{\theta JC}$	DC operation	1.5	°C/W
Maximum Thermal Resistance Junction to Case (per package)	$R_{\theta JC}$	DC operation	0.75	°C/W
Maximum Thermal Resistance, Case to Heat Sink	$R_{\theta CS}$	Mounting surface, smooth and greased	0.50	°C/W
Approximate Weight	wt	-	2	g
Mounting Torque	$T_M$	-	6(Min.) 12(Max.)	Kg-cm
Case Style	TO-220AB D <sup>2</sup> PAK TO-262 (suffix "s" for D <sup>2</sup> PAK; Suffix "-1" for TO-262)			

Data Sheet 2907, Rev. -

**Typical Forward Characteristics**



**Typical Reverse Characteristics**



**Typical Junction Capacitance**

