

## 20A, 650V SiC Merged PIN Schottky Diode

### FEATURES

- Max junction temperature 175°C
- MPS structure for high ruggedness to forward current surge events
- High-speed switching possible
- High forward surge capability
- High-frequency operation
- Positive temperature coefficient on  $V_f$
- RoHS compliant
- Halogen-free

### APPLICATIONS

- General purpose
- Switch mode power supplies
- Power factor correction

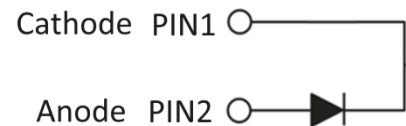
### MECHANICAL DATA

- Case: ITO-220AC-2L
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: As circuit diagram
- Weight: 1.65g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	20	A
$V_{RRM}$	650	V
$I_{FSM}$	128	A
$T_{J\ MAX}$	175	°C
Package	ITO-220AC-2L	
Configuration	Single die	



ITO-220AC-2L



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	VALUE	UNIT	
Repetitive peak reverse voltage	$V_{RRM}$	650	V	
Reverse voltage, total rms value	$V_{R(RMS)}$	455	V	
Continuous Rectified Forward Current @ $T_J = 116^\circ\text{C}$	$I_F$	20	A	
Surge peak forward current 10ms single half sine-wave superimposed on rated load	$I_{FSM}$	$T_C = 25^\circ\text{C}$	128	A
		$T_C = 125^\circ\text{C}$	108	A
Junction temperature	$T_J$	-55 to +175	°C	
Storage temperature	$T_{STG}$	-55 to +175	°C	

<b>THERMAL PERFORMANCE</b>				
PARAMETER	SYMBOL	TYP	MAX	UNIT
Junction-to-case thermal resistance	$R_{\theta JC}$	1.8	2.1	$^{\circ}\text{C}/\text{W}$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage <sup>(1)</sup>	$I_F = 10\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	1.17	-	V
	$I_F = 20\text{A}, T_J = 25^{\circ}\text{C}$		1.38	1.45	V
	$I_F = 10\text{A}, T_J = 150^{\circ}\text{C}$		1.19	-	V
	$I_F = 20\text{A}, T_J = 150^{\circ}\text{C}$		1.56	-	V
	$I_F = 10\text{A}, T_J = 175^{\circ}\text{C}$		1.22	-	V
	$I_F = 20\text{A}, T_J = 175^{\circ}\text{C}$		1.64	1.85	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^{\circ}\text{C}$	$I_R$	-	20	$\mu\text{A}$
	$T_J = 175^{\circ}\text{C}$		-	200	$\mu\text{A}$
Junction capacitance	$f = 1\text{MHz}, V_R = 1\text{V}$	$C_J$	945	-	pF
	$f = 1\text{MHz}, V_R = 200\text{V}$		134.5	-	pF
	$f = 1\text{MHz}, V_R = 400\text{V}$		92.7	-	pF
Capacitive Charge	$V_R = 400\text{V}$	$Q_C$	65.6	-	nC

**Notes:**

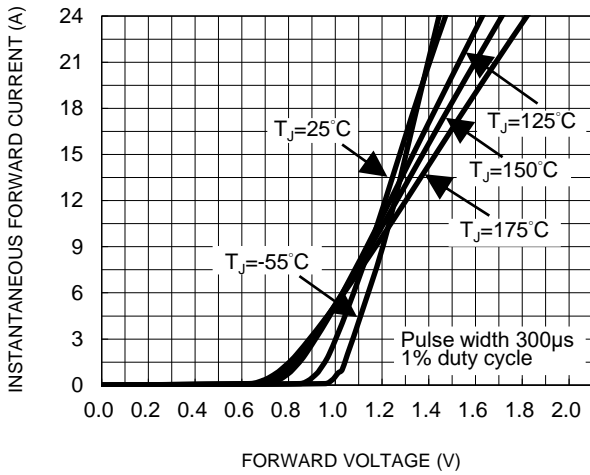
1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
ORDERING CODE	PACKAGE	PACKING
TSCDF20065G1	ITO-220AC-2L	50 / Tube

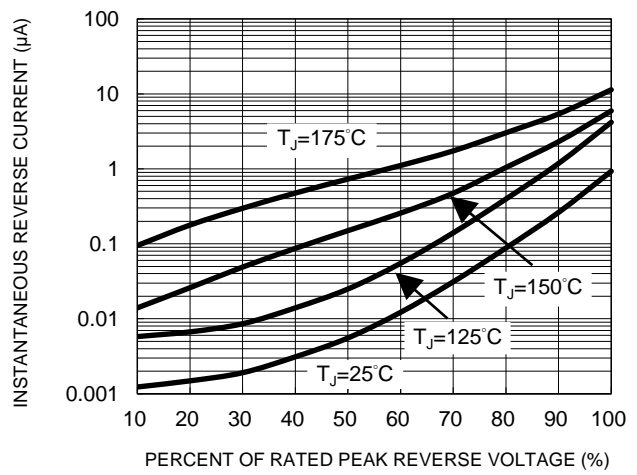
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

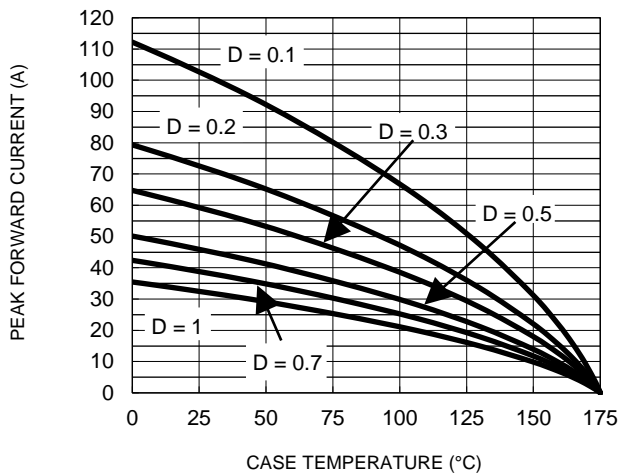
**Fig.1 Typical Forward Characteristics**



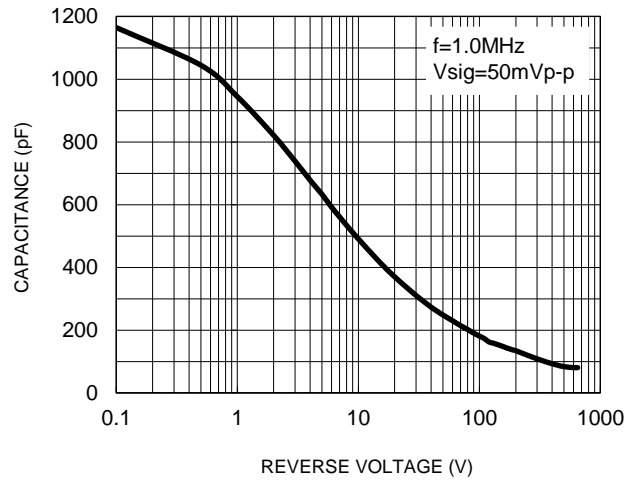
**Fig.2 Typical Reverse Characteristics**



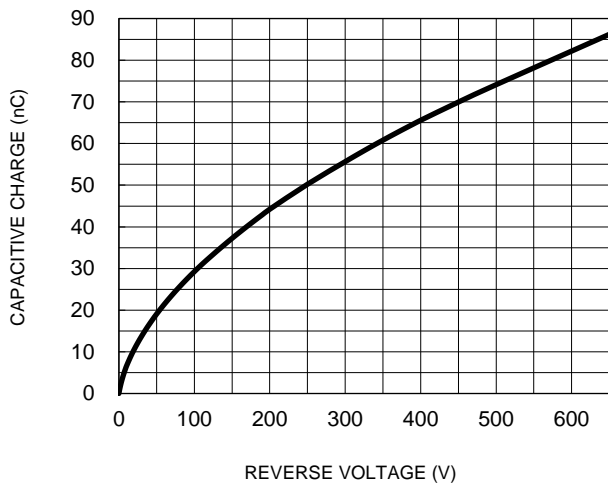
**Fig.3 Peak forward current versus case temperature**



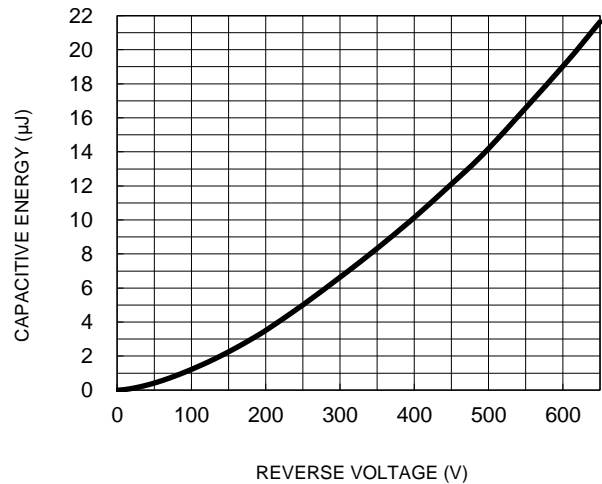
**Fig.4 Typical Junction Capacitance**



**Fig.5 Typical Capacitive Charge**



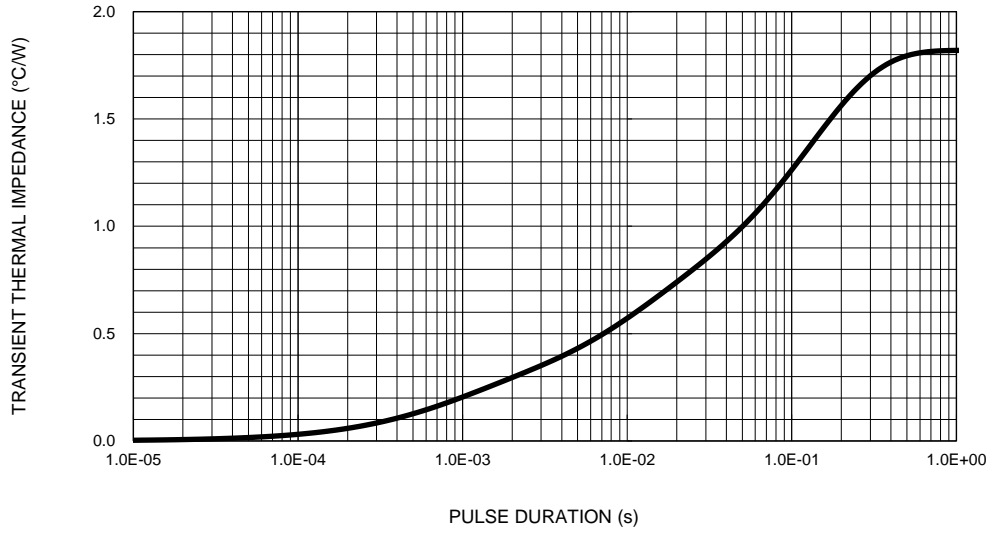
**FIG.6 Typical Capacitance Stored Energy**



**CHARACTERISTICS CURVES**

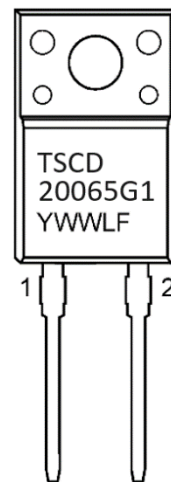
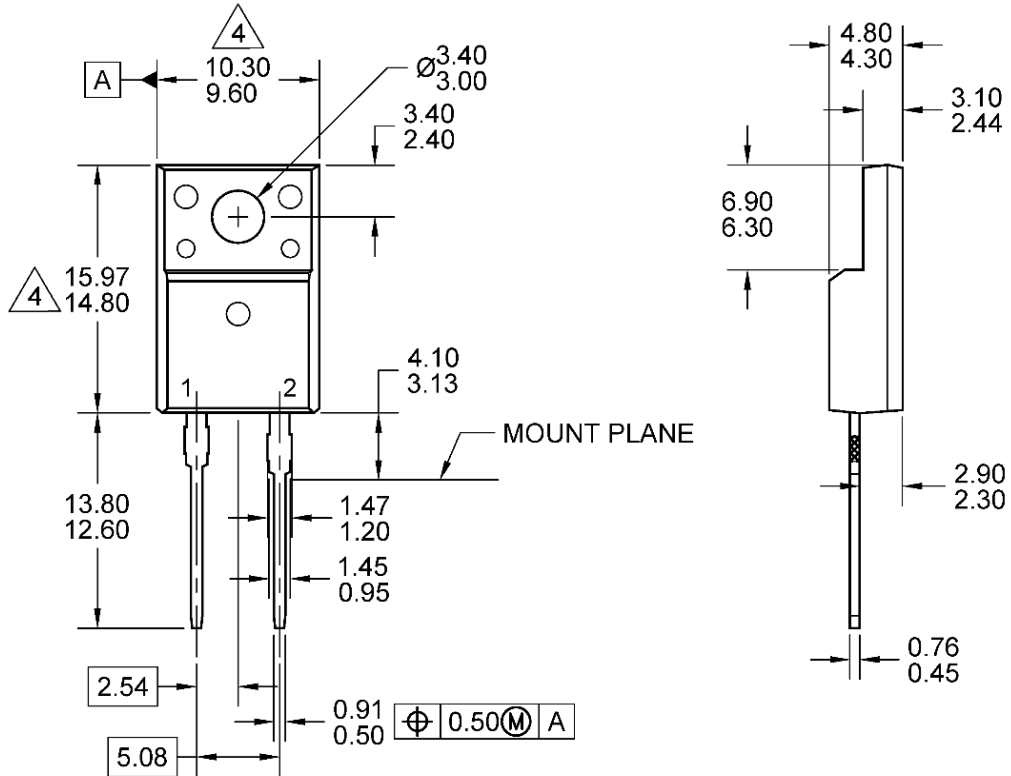
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.7 Typical Transient Thermal Characteristics**



**PACKAGE OUTLINE DIMENSIONS**

**ITO-220AC-2L**



**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: EIAJ ED-7500A-1, SC-91.
4. THIS DO NOT INCLUDE MOLD FLASH. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DWG NO. REF: HQ2SD07-ITO220ACSiC-120 REV A.

**MARKING DIAGRAM**

- Y = YEAR CODE
- WW = WEEK CODE (01~52)
- L = LOT CODE (1~9, A~Z)
- F = FACTORY CODE

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