

Silicon Carbide Schottky Barrier Diode

V_{RRM}	650 V	I_F	6A
$V_{F(Typ.)}$	1.3 V	Q_C	21 nC

Features

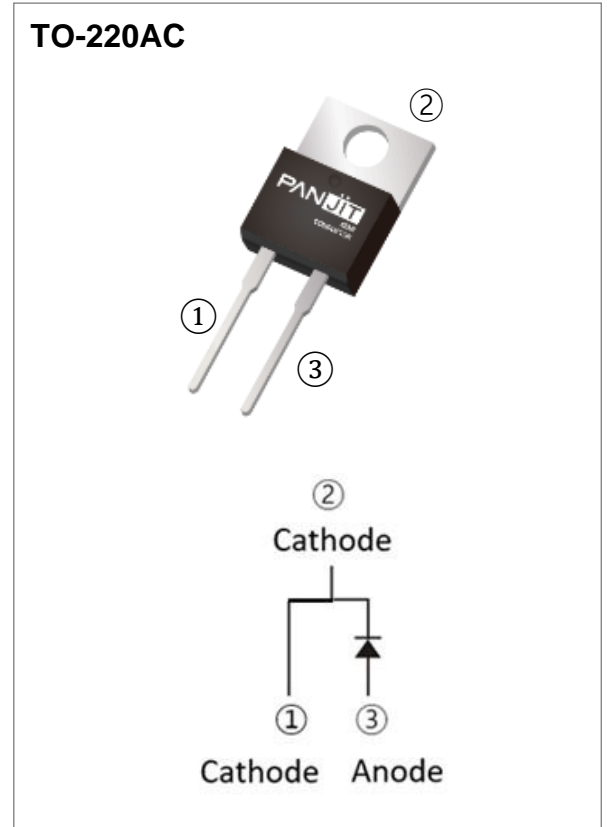
- Positive Temperature Coefficient on V_F
- Low Conduction Loss
- Zero Reverse Recovery
- High junction temperature 175 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 1.8903 grams

Application

- PFC, UPS, PV Inverter



Maximum Ratings and Thermal Characteristics ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

PARAMETER		SYMBOL	LIMIT	UNIT
Repetitive Peak Reverse Voltage		V_{RRM}	650	V
DC Blocking Voltage		V_{DC}	650	V
Continuous Forward Current	$T_C = 160\text{ }^\circ\text{C}$	I_F	6	A
Repetitive Peak Surge Current <i>Half Sine Wave, D=0.1</i>	$T_C = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$	I_{FRM}	54	A
	$T_C = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$		42	
Peak Forward Surge Current <i>Half Sine Wave</i>	$T_C = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$	I_{FSM}	66	A
	$T_C = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$		58	
Peak Forward Surge Current	$t_p = 10\mu\text{s}$, <i>Pulse</i>		800	A
i^2t value	$T_C = 25\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$	$\int i^2 dt$	21.8	A^2s
	$T_C = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ms}$		16.8	
Maximum Power Dissipation		P_{total}	90.9	W
Operating Junction Temperature Range		T_J	-55~175	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-55~175	$^\circ\text{C}$

Electrical Characteristics ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Voltage Drop	V_F	$I_F = 6\text{ A}, T_J = 25\text{ }^\circ\text{C}$	-	1.3	1.55	V
		$I_F = 6\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	1.36	-	
		$I_F = 6\text{ A}, T_J = 175\text{ }^\circ\text{C}$	-	1.46	-	
Reverse Leakage Current	I_R	$V_R = 650\text{ V}, T_J = 25\text{ }^\circ\text{C}$	-	0.3	15	μA
		$V_R = 650\text{ V}, T_J = 175\text{ }^\circ\text{C}$	-	1.7	-	μA
Total Capacitive Charge	Q_C	$I_F = 6\text{ A}, V_R = 400\text{ V}$	-	21	-	nC
Total Capacitance	C	$V_R = 1\text{ V}, f = 1\text{ MHz}$	-	325	-	pF
		$V_R = 200\text{ V}, f = 1\text{ MHz}$	-	40	-	pF
		$V_R = 400\text{ V}, f = 1\text{ MHz}$	-	38	-	pF
Capacitance Stored Energy	E_C	$V_R = 400\text{ V}$	-	3.6	-	μJ
Thermal Resistance	$R_{\theta JC}$		-	1.25	1.65	$^\circ\text{C/W}$

TYPICAL CHARACTERISTIC CURVES

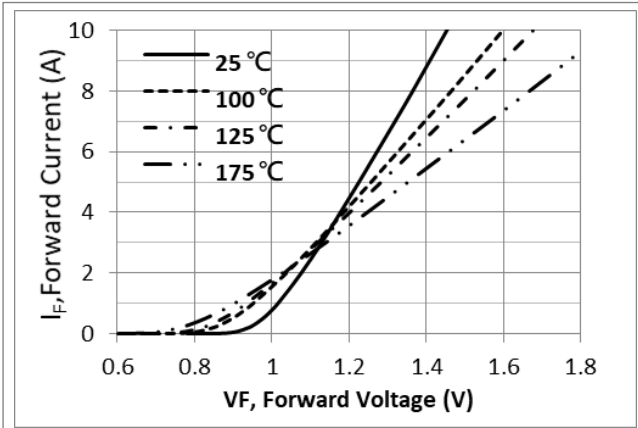


Fig.1 Forward Characteristics

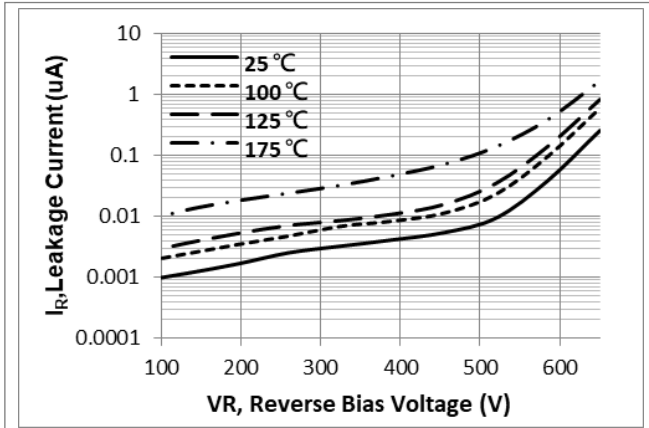


Fig.2 Reverse Characteristics

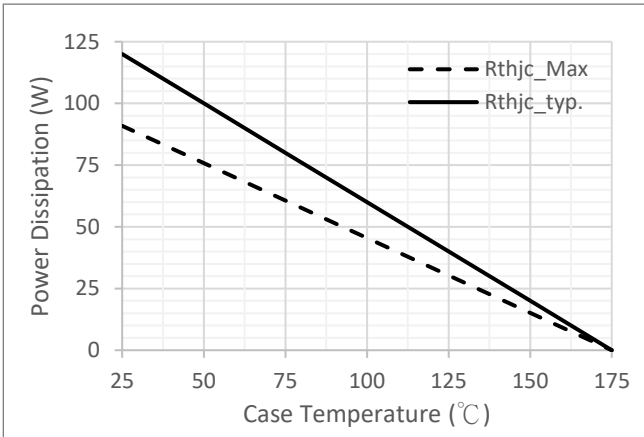


Fig.3 Power Derating Curve

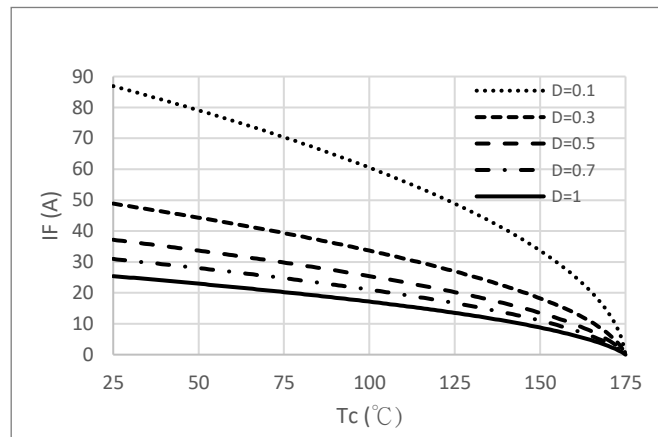


Fig.4 Maximum Forward Current

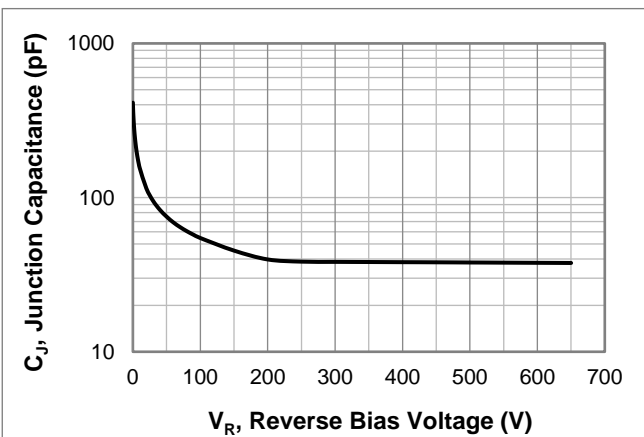


Fig.5 Typical Junction Capacitance

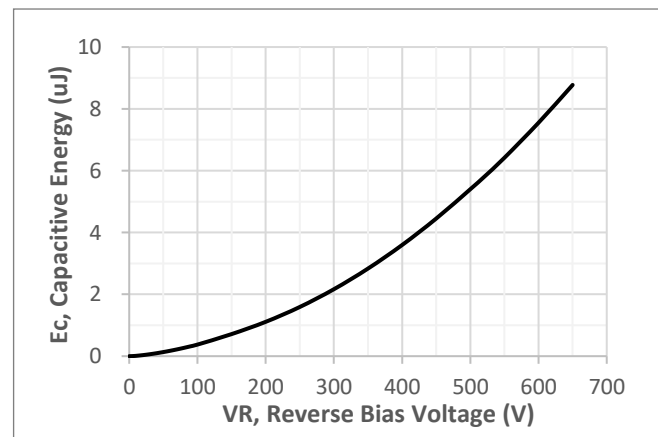


Fig.6 Capacitive Energy

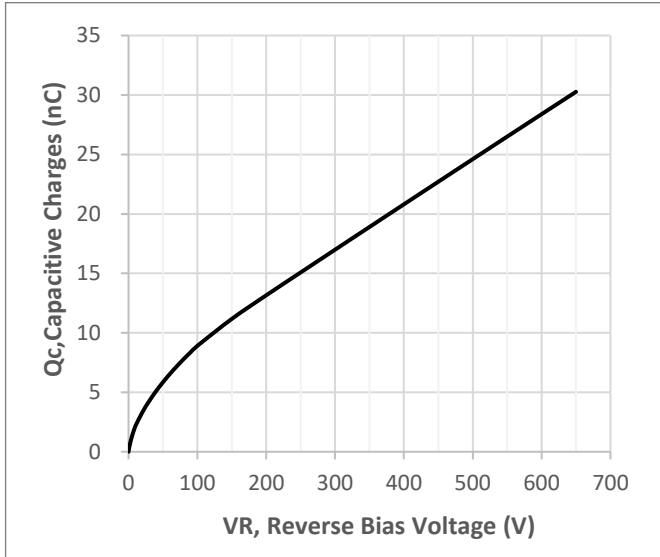


Fig.7 Total capacitive charges VS. Reverse voltage applied (typical values)

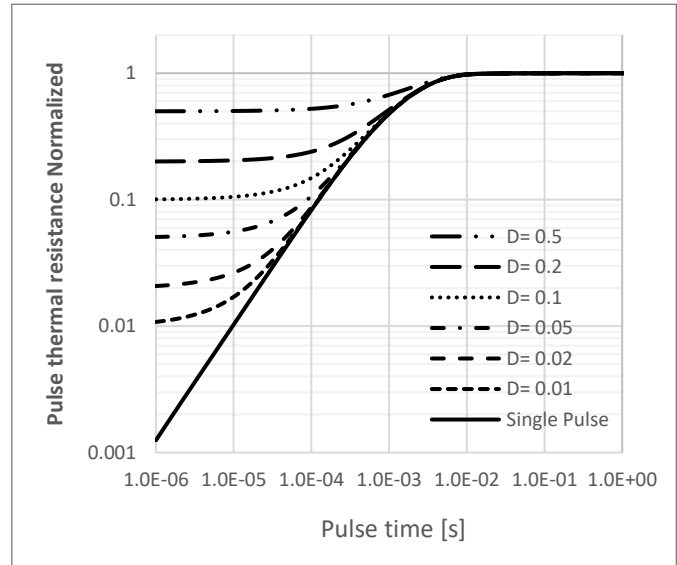
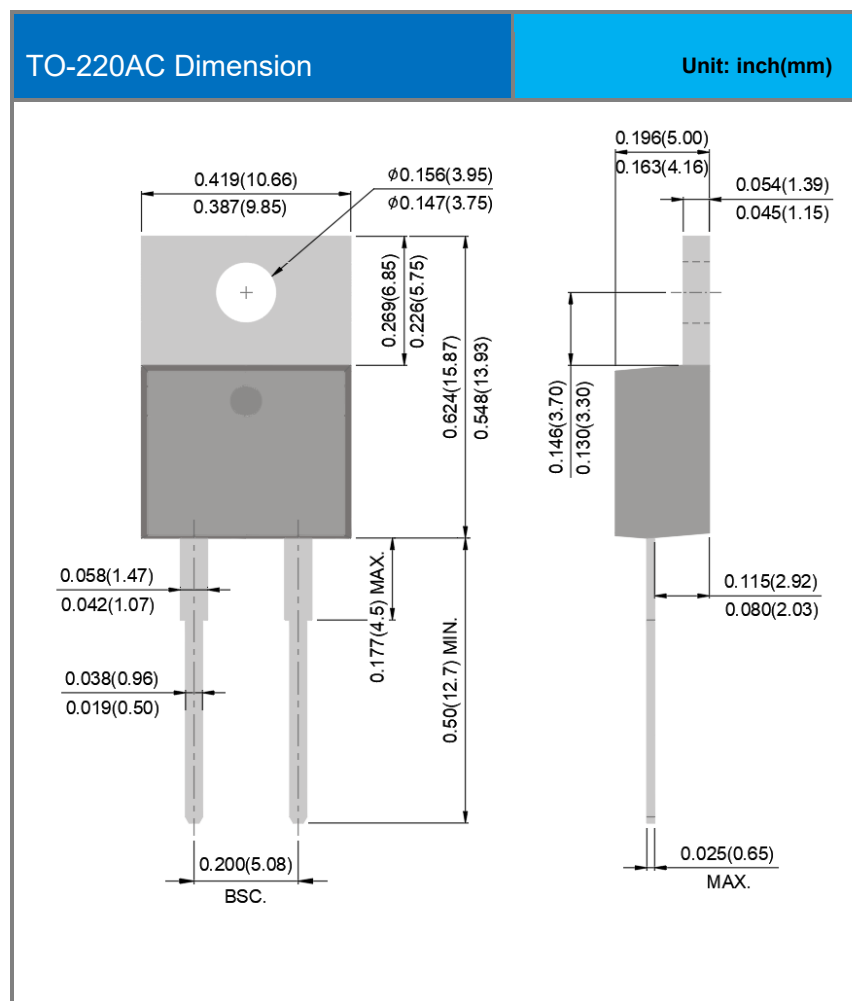


Fig.8 Max. Transient thermal impedance

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PCDP0665G3	TO-220AC	50pcs / Tube	CDP0665G3

Packaging Information



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