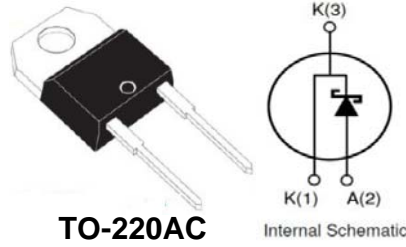




Silicon Carbide Power Schottky Barrier Diode



Features

- Rated to 650V at 20 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behaviour
- High temperature operation
- High frequency operation

Benefits

- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

- SMPS, e.g., CCM PFC;
- Motor drives, Solar application, UPS, Wind turbine, Rail traction, EV/HEV

Primary Characteristics

VRRM	650	V
IF, Tc ≤ 135°C	20	A
Qc	56	nC

Part No.	Remark	Package	Packing
ESIC20065S	General	TO-220AC	50 / Tube
ESIC20065S-H	Halogen Free		

Maximum Ratings (TA=25°C unless otherwise noted)				
Parameter	Symbol	Test Condition	Value	Units
Repetitive Peak Reverse Voltage	VRRM		650	V
Surge Peak Reverse Voltage	VRSM		650	
DC Blocking Voltage	VDC		650	
Continuous Forward Current	IF	TC=25°C	45	A
		TC=135°C	20	
Repetitive Peak Forward Surge Current	IFRM	TC=25°C, tp=10ms · Half Sine Wave · D=0.3	100	A
Non-repetitive Peak Forward Surge Current	IFSM	TC=25°C, tp=10ms · Half Sine Wave	200	A
Power Dissipation	PTOT	TC=25°C	141.5	W
		TC=110°C	61.3	W
Operating Junction	Tj		-55 to 175	°C
Storage Temperature	Tstg		-55 to 175	°C
Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	lbf-in



Silicon Carbide Power Schottky Barrier Diode

Electrical Characteristics

Parameter	Symbol	Test Conditions	Value	Unit
			Typ.	
Thermal resistance from junction to case	R _{th JC}		1.06	°C/W

Electrical Characteristics

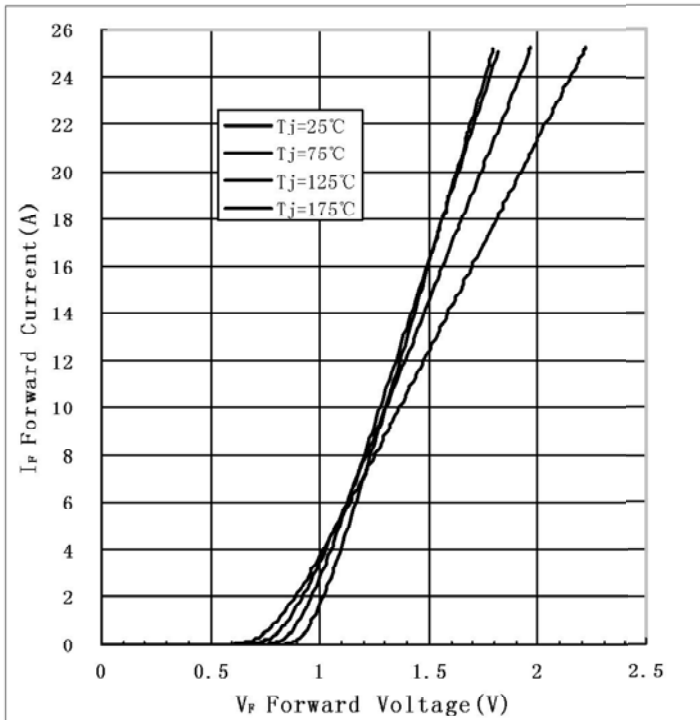
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V _F	I _F =20A, T _j =25°C	1.7	1.8	V
		I _F =20A, T _j =175°C	2	2.5	
Reverse Current	I _R	V _R =650V, T _j =25°C	30	100	μA
		V _R =650V, T _j =175°C	60	200	
Total Capacitive Charge	Q _c	V _R =400V, T _j =150°C	56	-	nC
		$Q_c = \int_0^{V_R} C(V) dV$			
Total Capacitance	C	V _R =0V, T _j =25°C, f=1MHZ	1170	1300	pF
		V _R =200V, T _j =25°C, f=1MHZ	110	120	
		V _R =400V, T _j =25°C, f=1MHZ	100	108	



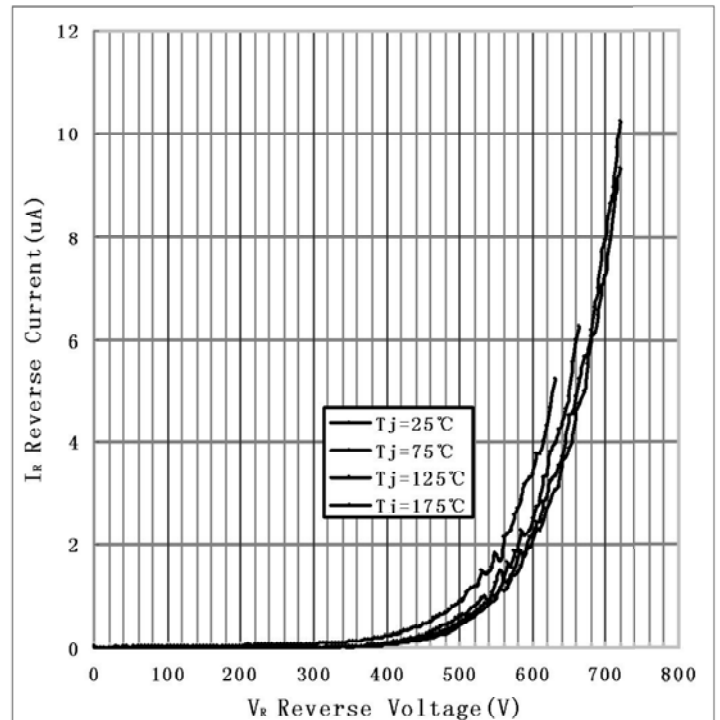
Silicon Carbide Power Schottky Barrier Diode

Rating and Characteristics Curvers

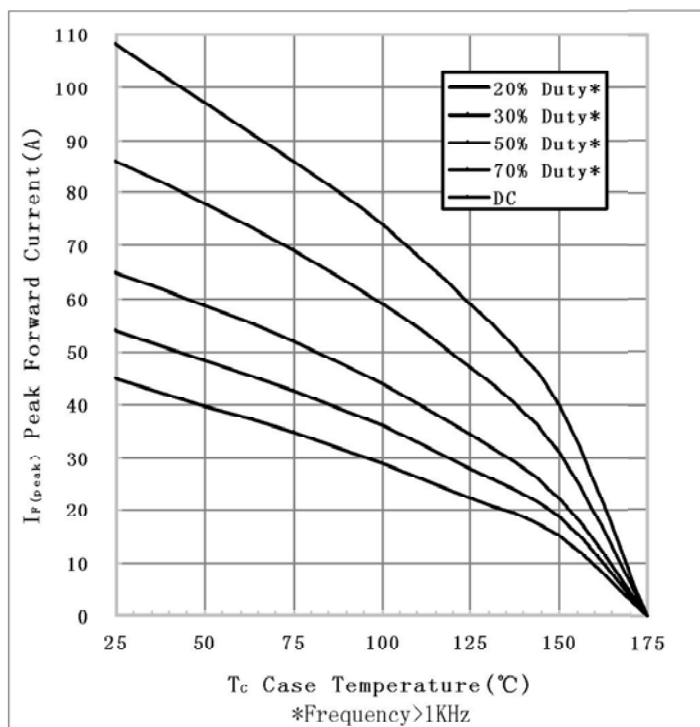
1) Forward IV characteristics as a function of Tj :



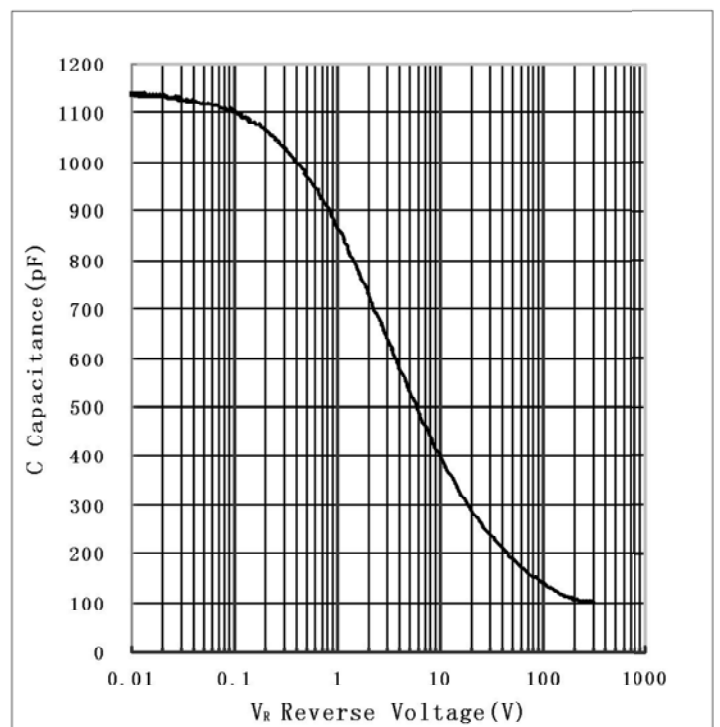
2) Reverse IV characteristics as a function of Tj :



3) Current Derating



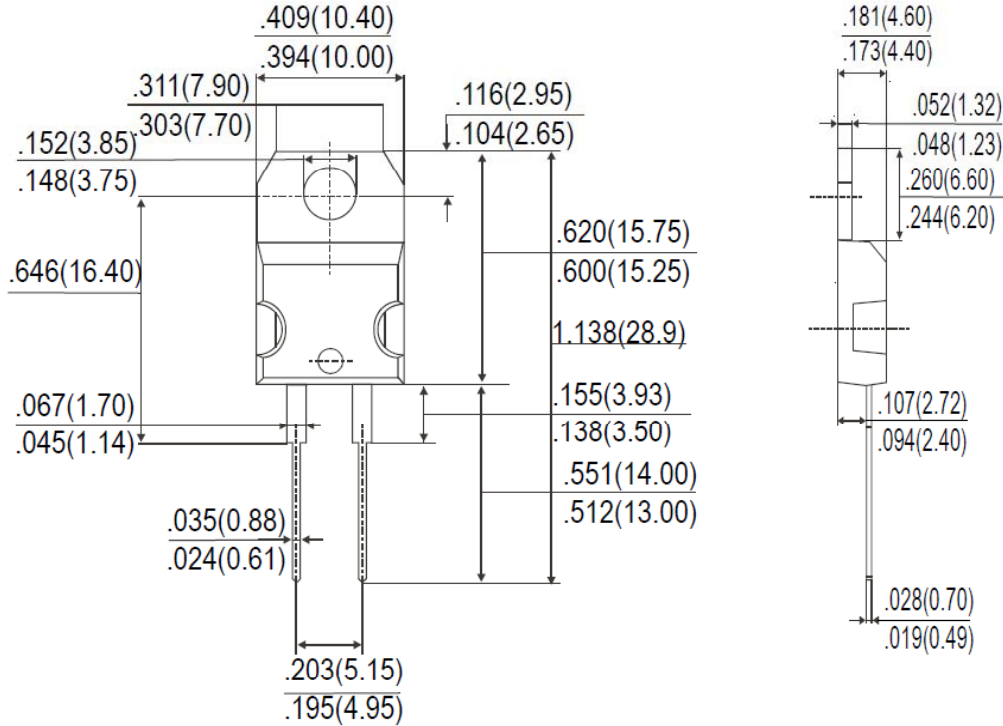
4) Capacitance vs. reverse voltage :





Silicon Carbide Power Schottky Barrier Diode

Package Outline Dimensions



TO-220AC

Dimensions in inches and (millimeters)

Bulk Packing

Package	Inner	Inner Box	Inner Box	Carton	Carton Size	Gross Weight
	Pack	(EA)	(mm)	(EA)	(mm)	(Kg)-Approx.
TO-220AC	Tube	2000	539*184*79	4000	558*180*200	11.9