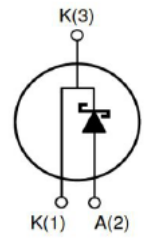
ESIC10120S

Silicon carbide power schottky diode

TO-220AC



Internal Schematic

Features

- Rated to 1200V at 10 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behaviour
- High temperature operation
- High frequency operation
- Marking : ESIC10120S

Benefits

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

Application

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

Ordering Information

Part No.	Package	Packing
ESIC10120S	TO-220AC	50 / Tube

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Limit	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	T_j=25℃	1200	V
Surge Peak Reverse Voltage	V_{RSM}	T_j=25℃	1200	V
DC Blocking Voltage	V_{DC}	T_j=25℃	1200	V
Continuous Forward Current	I_F	T_j=25℃ Tj=135℃ Tj=150℃	25.9 12.5 10	A
Repetitive Peak Forward Surge Current	I_{FRM}	T_C=25 ℃ , tp=10ms, Half Sine Wave, D=0.3	50	A
Non-Repetitive Peak Forward Surge Current	I_{FSM}	T_C=25 ℃ , tp=10ms, Half Sine Wave	60	A
Power Dissipation	P_{TOT}	T_C=25℃	141.5	W
		T_C=110℃	62	W
Maximum Case Temperature	T_C		135	°C
Operating Junction and Storage Temperature	Tj、Tstg		-55~+175	°C
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in
Thermal resistance from junction to case	$R_{\theta JC}$		1.06 Typ.	°C/W

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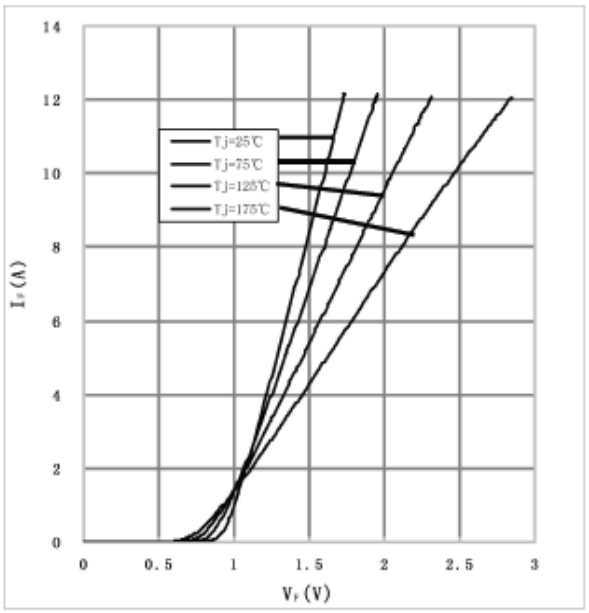
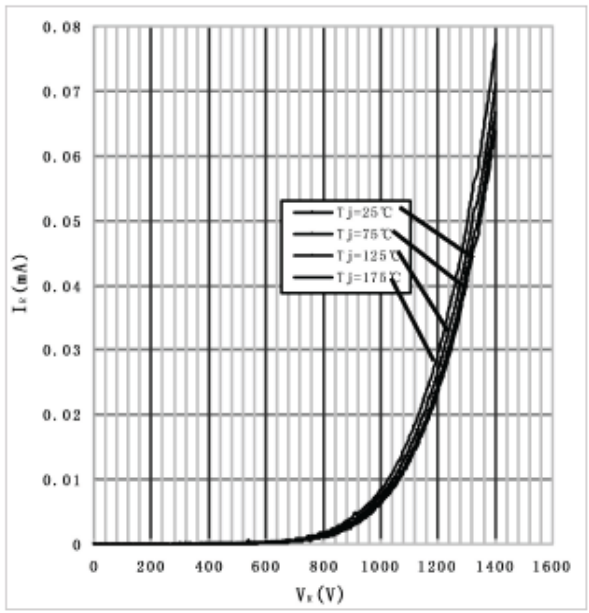
Electrical Characteristics (T_A = 25 °C unless otherwise specified)						
Parameter	**Conditions**	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Forward Voltage	I_F=10A, T_j=25℃	V_F	-	1.63	1.8	V
	I_F=10A, T_j=175℃		-	2.55	3	
Reverse Current	V_R=1200V, T_j=25℃	I_R	-	50	100	μA
	V_R=1200V, T_j=175℃		-	100	200	
Total Capacitive Charge	V_R=800V, T_j=150℃ $Qc = \int_0^{VR} C(V)\,dV$	Q_C	-	69	-	nC
Total Capacitive Charge	V_R=0V, T_j=25℃, f=1MHZ	C	-	770	790	pF
	V_R=400V, T_j=25℃, f=1MHZ		-	52	54	
	V_R=800V, T_j=25℃, f=1MHZ		-	50	51	

Rating and Characteristics Curves

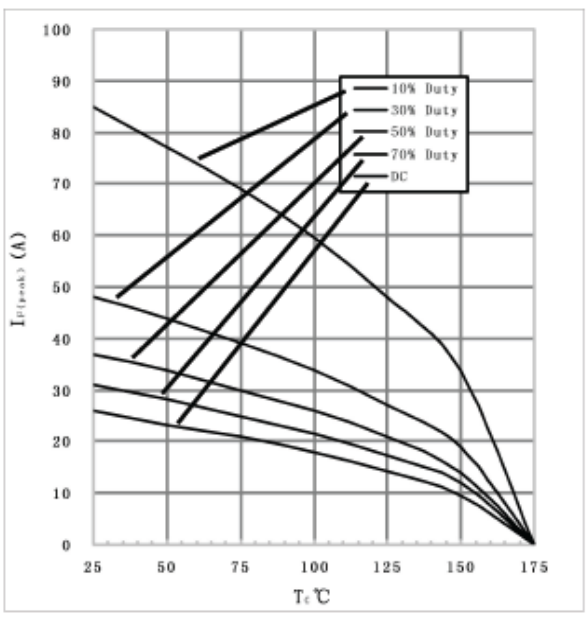
1) Forward IV characteristics as a function of Tj :



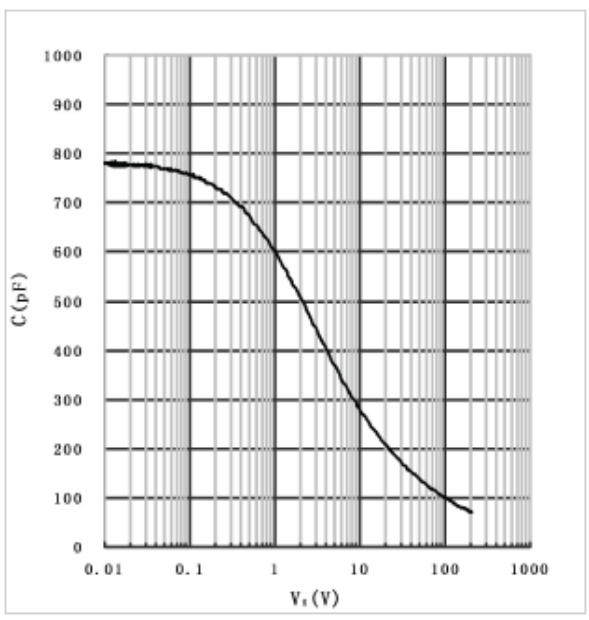
2) Reverse IV characteristics as a function of Tj :



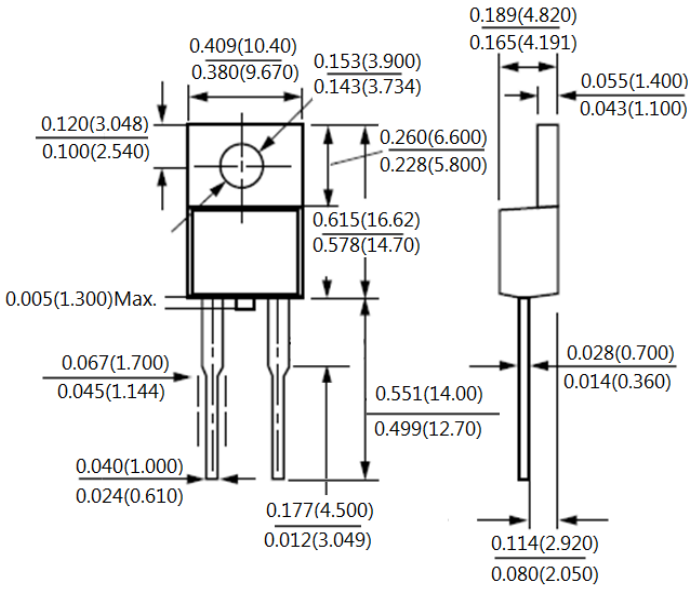
3) Current Derating



4)Capacitance vs. reverse voltage :



Package Outline Dimensions



TO-220AC

Dimensions in inches and (millimeters)