



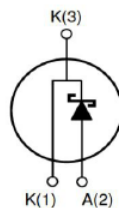
## Silicon carbide power schottky diode



TO-220AC(S)



TO-220AC



Internal Schematic

Features
<ul style="list-style-type: none"> <li>• Rated to 650V at 10 Amps</li> <li>• Zero reverse recovery current</li> <li>• Zero forward recovery voltage</li> <li>• Temperature independent switching behaviour</li> <li>• High temperature operation</li> <li>• High frequency operation</li> <li>• Marking : ESIC10065S</li> </ul>

Benefits
<ul style="list-style-type: none"> <li>• Unipolar rectifier</li> <li>• Substantially reduced switching losses</li> <li>• No thermal run-away with parallel devices</li> <li>• Reduced heat sink requirements</li> </ul>

Ordering Information		
Part No.	Package	Packing
ESIC10065S	TO-220AC	50 / Tube
ESIC10065S-S	TO-220AC(S)	

Application
<ul style="list-style-type: none"> <li>• SMPS, e.g., CCM PFC</li> <li>• Motor drives, Solar application, UPS, Wind turbine, Rail traction, EV/HEV</li> </ul>

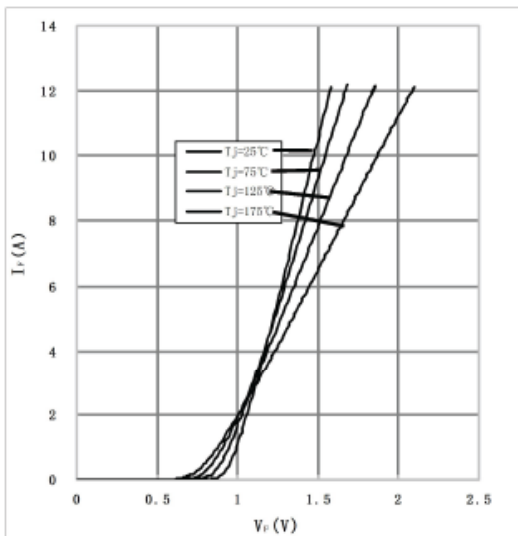
Absolute Maximum Ratings (T <sub>A</sub> =25°C unless otherwise specified)				
Parameter	Symbol	Conditions	Limit	Unit
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	T <sub>j</sub> =25°C	650	V
Surge Peak Reverse Voltage	V <sub>RSM</sub>	T <sub>j</sub> =25°C	650	V
DC Blocking Voltage	V <sub>DC</sub>	T <sub>j</sub> =25°C	650	V
Continuous Forward Current	I <sub>F</sub>	T <sub>j</sub> =25°C	29	A
		T <sub>j</sub> =135°C	14	
		T <sub>j</sub> =150°C	10	
Repetitive Peak Forward Surge Current	I <sub>FRM</sub>	T <sub>C</sub> =25 °C , tp=10ms, Half Sine Wave, D=0.3	50	A
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>	T <sub>C</sub> =25 °C , tp=10ms, Half Sine Wave, D=0.3	60	A
Power Dissipation	P <sub>TOT</sub>	T <sub>C</sub> =25°C	53.2	W
		T <sub>C</sub> =110°C	24	W
Maximum Case Temperature	T <sub>C</sub>		135	°C
Operating Junction and Storage Temperature	T <sub>j</sub> · T <sub>stg</sub>		-55~+175	°C
Typical Thermal Resistance from Junction to Case	R <sub>θJC</sub>		1.29	°C/W



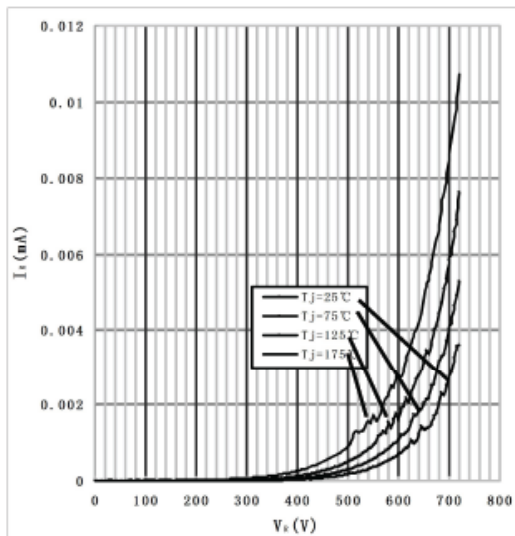
Electrical Characteristics ( T <sub>A</sub> = 25 °C unless otherwise specified )						
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward Voltage	I <sub>F</sub> =10A, T <sub>J</sub> =25°C	V <sub>F</sub>	-	1.5	1.8	V
	I <sub>F</sub> =10A, T <sub>J</sub> =175°C		-	1.9	2.5	
Reverse Current	V <sub>R</sub> =650V, T <sub>J</sub> =25°C	I <sub>R</sub>	-	10	100	μA
	V <sub>R</sub> =650V, T <sub>J</sub> =175°C		-	15	200	
Total Capacitive Charge	V <sub>R</sub> =400V, T <sub>J</sub> =150°C Q <sub>C</sub> = ∫ <sub>0</sub> <sup>V<sub>R</sub></sup> C(V) dV	Q <sub>C</sub>	-	36	-	nC
Total Capacitive Charge	V <sub>R</sub> =0V, T <sub>J</sub> =25°C, f=1MHZ	C	-	600	700	pF
	V <sub>R</sub> =200V, T <sub>J</sub> =25°C, f=1MHZ		-	59	62	
	V <sub>R</sub> =400V, T <sub>J</sub> =25°C, f=1MHZ		-	58	60	

Rating and Characteristics Curves

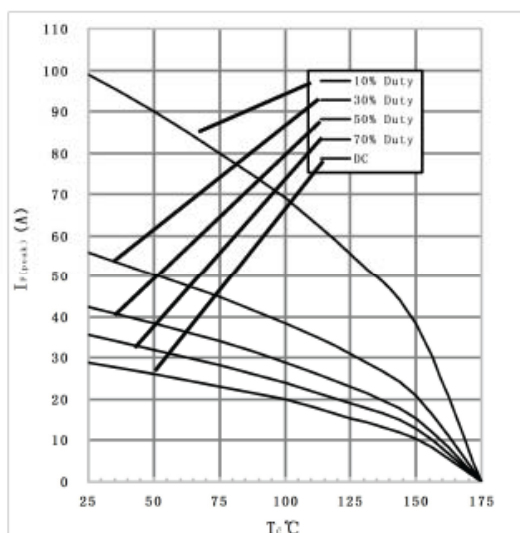
1) Forward IV characteristics as a function of T<sub>J</sub> :



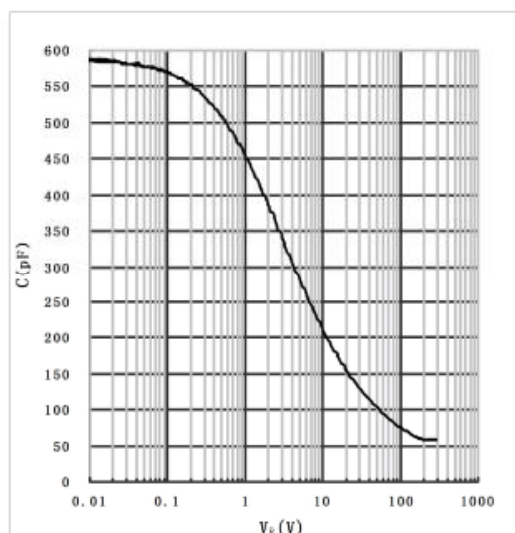
2) Reverse IV characteristics as a function of T<sub>J</sub> :



3) Current Derating

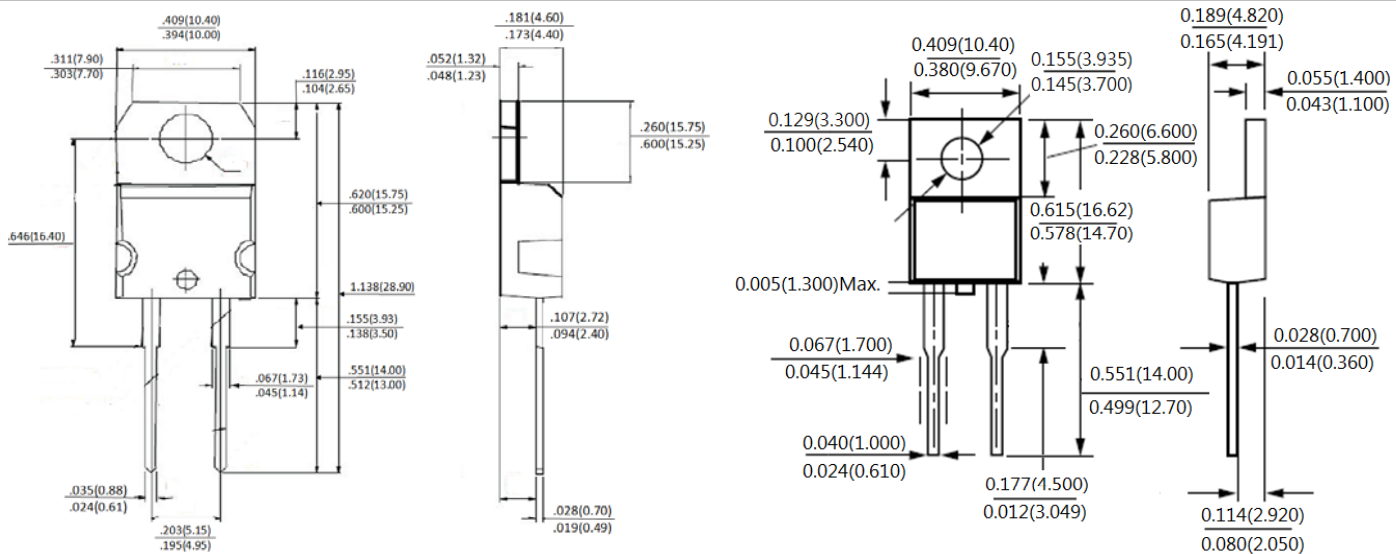


4) Capacitance vs. reverse voltage :





Package Outline Dimensions



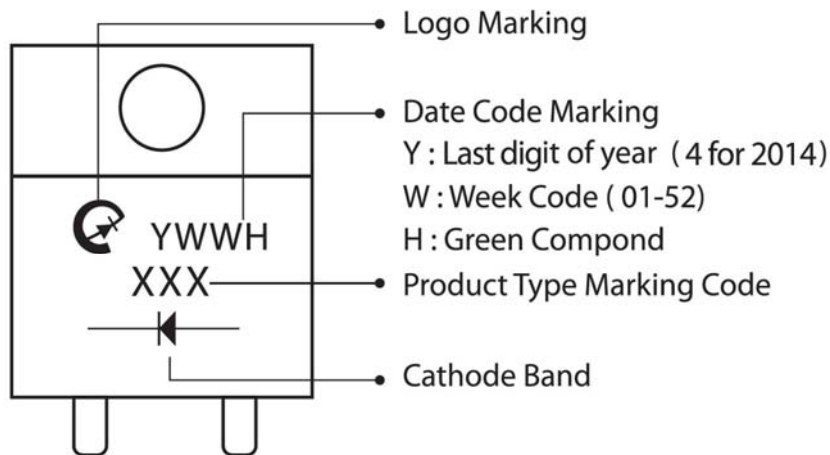
TO-220AC(S)

Dimensions in inches and (millimeters)

TO-220AC

Dimensions in inches and (millimeters)

Marking Information



Bulk Packing

Package	Inner Pack	Inner Box (EA)	Inner Box (mm)	Carton (EA)	Carton Size (mm)	Gross Weight (Kg)-Approx.
TO-220AC	Tube	2000	539x184x79	4000	558x180x200	11.9