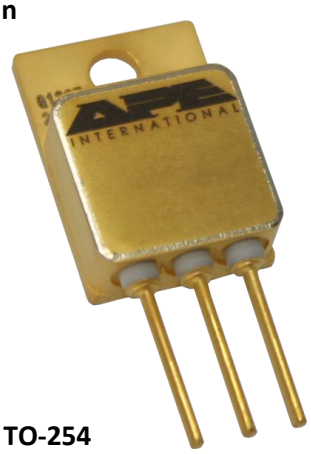
High Temperature Silicon Carbide Schottky Diode

1200 V / 10 A / 64 nC

FEATURES

- High temperature: $T_{c(max)}$ = 225 °C
  $T_{j(max)}$ = 225 °C
- AS9100:Rev. C-certified manufacturing, traceable throughout value chain
- Near zero forward and reverse recovery
- Extremely fast switching
- High system efficiency
- Hermetic seal; flux free, void free packaging
- Backside isolation
- High reliability



TO-254 Package

A K A

APPLICATIONS

- Downhole tools
- High efficiency converters
- Motor drives
- Aerospace: Military & Commercial
- Smart grid/grid-tie distributed generation

Absolute Maximum Ratings[1] (at T_j = 25 °C unless otherwise stated)

Symbol	Parameter	Condition(s)	Value	Units
V_{RRM}	Repetitive peak reverse voltage		1200	V
V_{DC}	DC blocking voltage		1200	
I_F	Continuous forward current	T_j < 160 °C	10	A
I_{FRM}	Repetitive peak forward surge current	T_j = 125 °C, D = 0.1	46	
I_{FSM}	Non-repetitive peak forward surge current	T_c = 25 °C, t_P = 10 ms, $R_{th(j-c)}$ < 1.1 °C/W	45	
$I_{F(max)}$	Non-repetitive peak forward current	T_c = 25 °C, t_P = 10 µs, $R_{th(j-c)}$ < 1.1 °C/W	250	
P_{tot}	Power dissipation	T_j = 25 °C	TBD[2]	W
		T_j = 100 °C	TBD	
		T_j = 225 °C	TBD	
T_j	Operating junction temperature		-50 to 205	°C
T_{stg}	Storage temperature		-50 to 225	°C
V_{isol}	Insulation test voltage	AC, 1 min.	TBD	V

[1] Obtained from SemiSouth Laboratories, Inc. SDC10S120 Rev. 1.1 (August 2008) datasheet
[2] Data verified through APEI experimentation and/or calculation

		AC, 1 s.		TBD	V

SiC Diode Electrical Characteristics[1]

Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
$V_{SD} = V_F$	Diode forward voltage	I_F = 10 A, T_j = 25 °C (in TO-220)	-	1.6	1.8	V
		I_F = 10 A, T_j = 175 °C (in TO-220)	-	2.4	2.9	
I_R	Reverse current	V_R = 1200 V, T_j = 25 °C (on wafer)	-	10	100	µA
		V_R = 1200 V, T_j = 175 °C (in TO-220)	-	200	-	
Q_C	Total capacitive charge	V_R = 1200 V, I_F = 10 A di_F/dt = 500 A/µs, (in TO-220)		64		nC
C	Total capacitance	V_R = 0 V, T_j = 25 °C, f = 100 kHz	-	1137	-	pF
		V_R = 300 V, T_j = 25 °C, f = 100 kHz	-	42	-	
		V_R = 600 V, T_j = 25 °C, f = 100 kHz	-	35	-	

Thermal Characteristics

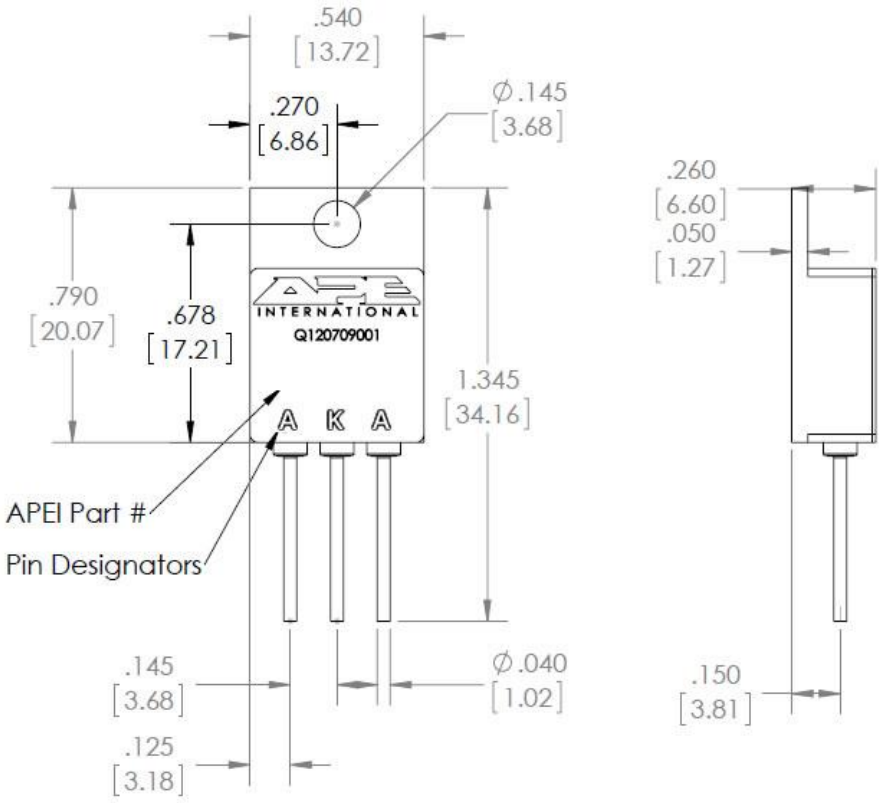
Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
$R_{\theta(j-c)}$	Thermal resistance junction-case	Calculated at 200 °C		TBD	1.0	°C/W

Mechanical Characteristics

Symbols	Parameter	Condition(s)	Values			Units
			Min.	Typical	Max.	
w	Weight			9.0		g
M_s	Mounting torque	6-32 steel screw into an Al heat sink		0.78	1.04	N-m

PACKAGE DIMENSIONS

All dimensions shown are in inches [millimeters]



PART NUMBER	PACKAGE	MARKING
APE HT-xxxx	TO-254	Q120709001

COMPANION PARTS

Silicon Carbide Schottky Diode, APE-HT-xxxx

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