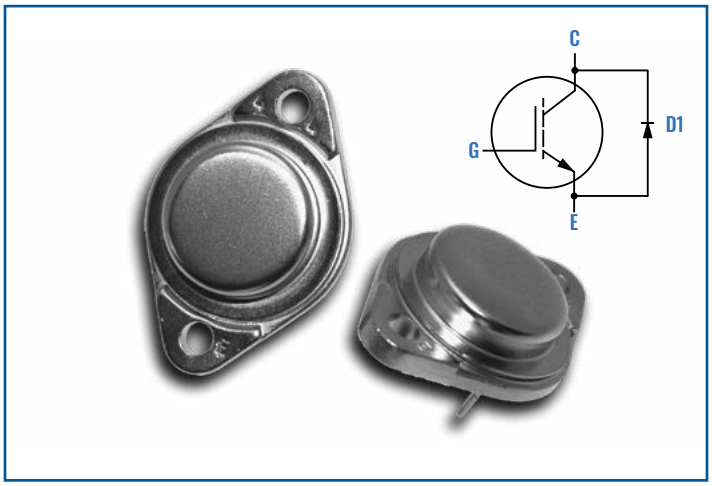
SD11428
1200V Silicon Carbide IGBT - 1

KEY FEATURES

- BV_{ces} 1200V
- $I_{ds\ (on)}$ @ 125°C 22A
- TO-3 PACKAGE



BENEFITS

- COMPACT, LIGHTWEIGHT DESIGN
- INCREASED POWER DENSITY

APPLICATIONS

- AEROSPACE
- HIGH EFFICIENCY CONVERTERS & MOTOR DRIVES
- POWER SUPPLIES

ORDERING GUIDE

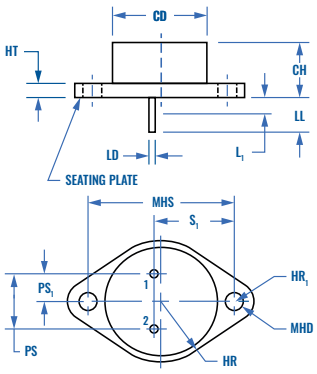
Part Number SD11428

Description 1200V Silicon Carbide IGBT

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	TEST CONDITIONS
Collector-Emitter Voltage	BV_{ces}	1200Vdc	V_{ge} = 0V, I_C = 0.25mA
Gate-Emitter Voltage, Continuous	V_{ge}	±20Vdc	
Collector Current, Continuous	$I_{ds\ (on)}$	22Adc	
Power dissipation	P_d	165W	
Lead temperature (soldering, 10s)	T_L	+300°C	
Junction Temperature (Tj)	T_j	+125°C	
Storage Temperature Range	T_{st}	-55°C to +125°C	
Thermal resistance, junction-to-case	Θ_{jc}	0.75 °C/W	
dv/dt		3V/ns	R_g= 5Ω, di/dt <100A/µs)

PACKAGE OUTLINE - TO-3



Ltr	Dimensions			
	Inches		mm	
	Min.	Max.	Min.	Max.
CD		0.875		22.22
CH	0.250	0.328	6.35	8.33
HR	0.495	0.525	12.57	13.34
HR1	0.131	0.188	3.33	4.78
HT	0.060	0.135	1.52	3.43
LD	0.038	0.043	0.97	1.09
LL	0.312	0.500	7.92	12.70
L1		0.050		1.27
MHD	0.151	0.161	3.84	4.09
MHS	1.177	1.197	29.90	30.40
PS	0.420	0.440	10.67	11.18
PS1	0.205	0.225	5.21	5.72
S1	0.655	0.675	16.64	17.15

PIN DESCRIPTION

Pin	Description
1	Gate
2	Emitter
Case	Collector

ELECTRICAL SPECIFICATIONS
-55V°C ≤ T_A ≥ +125°C

Parameter	Symbol	Conditions (UOS)	Group A subgroups	Min.	Typ.	Max.	Unit
Collector-Emitter Breakdown Voltage	BV_{ces}	V_{ge} = 0V I_c = 0.25mA	-55°C, +25°C +125°C			1200	V
Gate Threshold Voltage	$V_{ge(th)}$	V_{ce} = V_{ge} I_c = 1mA	+25°C	5.4	5.9	6.5	V
Gate Emitter Leakage Current	I_{GSS}	V_{ge} = ±20V V_{ce} = 0V	+25°C			±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{ce} = 1000V V_{ge} = 0V	-55°C, +25°C			0.1	mA
			+125°C			1.0	
Collector-Emitter Resistance	$R_{ce\ (on)}$	V_{ge} = 10V I_c = 5A	+25°C			320	mΩ
Forward Transconductance	g_{fs}	V_{ce} = 15V I_c = 5A	+25°C	4.0			S
Input Capacitance	C_{iss}	V_{ge} = 0V	+25°C		937		pF
Output Capacitance	C_{oss}	V_{ce} = 25V	+25°C		165		pF
Reverse Transfer Capacitance	C_{rss}	f = 1MHz	+25°C		100		pF
Turn-On Delay	$t_{d\ (on)}$	V_{ge} = 15V	+25°C		70		ns
Rise Time	t_r	V_{ce} = 450V	+25°C		250		ns
Turn-off Delay	$t_{d\ (off)}$	I_c = 15A	+25°C		250		ns
Fall Time	t_f	R_g = 2Ω external	+25°C		500		ns
Total Gate Charge	Q_g	V_{ge} = 15V	+25°C		47		nC
Gate-Emitter Charge	Q_{ge}	V_{ce} = 450V	+25°C		38		nC
Gate-Collector Charge	Q_{gc}	I_c = 15A	+25°C		42		nC

EMITTER-COLLECTOR DIODE RATINGS
-55V°C ≤ T_A ≥ +125°C

Parameter	Symbol	Conditions (UOS)	Group A subgroups	Min.	Typ.	Max.	Unit
Continuous Source Current	I_s	V_{ge} = 0V	+25°C			35	A
Pulse Current	I_{sm}	PW limited by T_j	+25°C			45	A
Diode Forward Voltage	V_{sd}	V_{ge} = 0V I_c = 15A	+25°C			2.2	V
Reverse Recovery	t_{rr}	V_{ge} = 0V I_c = 7.5A di/dt = 100A/µs V_r = 10V	+25°C			150	ns

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