SEMITRONICS CORP.

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SEG506200

POWER IGBT

FEATURES

- Isolated Case
- Hermetically Sealed Package
- High Current Capability
- Fast Switching
- Low $V_{CE(SAT)}$
- MOS Gate turn-on
- B.O. Substrate
- MIL STX Screening Available

APPLICATIONS

- High Reliability Power Supplies
- Switch Mode Power Supplies
- DC Choppers
- DC Servo & Robot Drives
- High Speed Power Switching

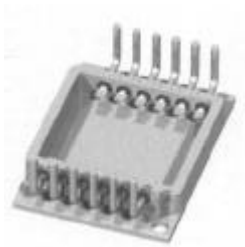
DESCRIPTION

The SEG506220 is a 200 Amp, 600 volts, Power IGBT packaged in an hermetically sealed metallic case.

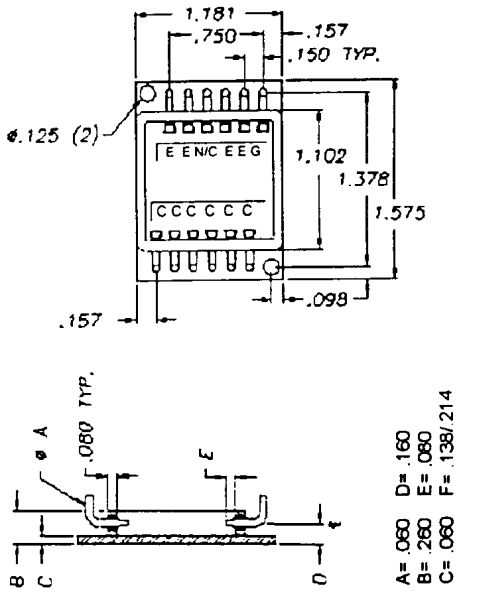
Provides High Power density in a military grade construction capable to withstand a force of 5000G's minimum.

Add STX suffix for Military screening

PACKAGE



CASE OUTLINE



Absolute Maximum Ratings

Parameter		Maximum	Units
Continuous Drain Current	I_C @ Tc = 25° C,	200	A
Continuous Drain Current	I_C @ Tc = 90°C	100	A
Pulse Collector Current	I_{CM} @ Tc = 25°C, 1ms	300	A
Power Dissipation	P_C @ Tc =25° C	625	W
Gate-to-Emitter Voltage	V_{GES}	± 20	V
Collector-to-Emitter Voltage	V_{CES} @ Tj = 25° to 150°C	600	V
Operating & Storage Temperature	Tj & T_{STG}	-55 to +150	°C

Static @ Tj = 25°C (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
Collector-to-Emitter Breakdown V.	$V_{(BR)CES}$	600	—	—	V	V_{GE} = 0V, I_C = 250uA
Collector-to-Emitter Saturation V.	$V_{CE(sat)}$	—	—	2.5	V	V_{GE} = 15V, I_C = 100A,
Gate Threshold Voltage	$V_{GE(th)}$	2.5	—	6	V	V_{CE} = V_{GE}, I_C = 10 mA
Zero Gate Voltage Collector Current	I_{CES}	—	—	200	uA	V_{CE} = 480V, V_{GE} = 0V
		—	—	2000		V_{CE} = 480V, V_{GE} = 0V, Tj =125°C
Gate-to-Emitter Forward Leakage	I_{GES}	—	—	400	nA	V_{GE} = 20V, V_{CE} = 0V
Gate-to-Emitter Forward Leakage	I_{GES}	—	—	-400		V_{GE} = -20V, V_{CE} = 0V

Dynamic @ Tj = 25°C (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
Forward Transconductance	gfs	40	57	—	S	V_{CE} = 10V, I_C = 60A, pulse
Total Gate Charge	Qg	—	465	—	nC	I_C = 100A V_{GE} = 15V V_{CE} = 300V
Gate-to-Emitter Charge	Qge	—	52	—		
Gate-to-Collectoe Charge	Qgc	—	228	—		
Turn-on-Delay Time	$t_{d(on)}$	—	100	—	ns	Inductive Load @ Tj = 25° C V_{GE} = 15V V_{CE} = 480V I_C = 100A R_G = 2.4 Ohms L = 30 uH
Rise Time	t_r	—	100	—		
Turn-Off-Delay Time	$t_{d(off)}$	—	800	1100		
Fall time	t_f	—	350	500		
Turn-Off Switching Loss	E_{off}	—	14.4	—	mJ	
Turn-On Switching Loss	E_{on}	—	2.4	—		
Turn-on-Delay Time	$t_{d(on)}$	—	100	—	ns	Inductive Load @ Tj = 125° C, V_{GE} = 15V V_{CE} = 480V I_C = 100A R_G = 2.4 Ohms L = 30 uH
Rise Time	t_r	—	200	—		
Turn-Off-Delay Time	$t_{d(off)}$	—	780	—		
Fall time	t_f	—	250	—		
Turn-Off Switching Loss	E_{off}	—	14.4	—	mJ	
Turn-On Switching Loss	E_{on}	—	4.8	—		
Input Capacitance	C_{ies}	—	9000	—	pF	V_{CE} = 25V V_{GE} = 0V f = 1.0 MHZ
Output Capacitance	C_{oes}	—	600	—		
Reverse Transfer Capacitance	C_{res}	—	305	—		

Thermal Resistance

Parameter		Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	—	0.19	°C/W
Case-to-Sink, flat, Greased Surface	$R_{\theta CS}$	0.045	—	

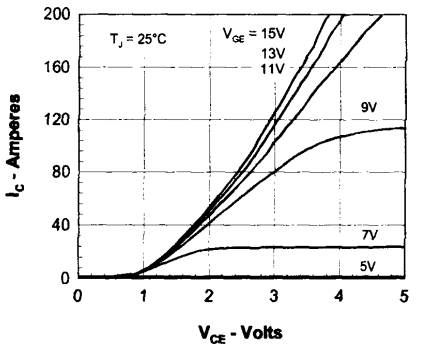


Fig. 1. Saturation Voltage Characteristics

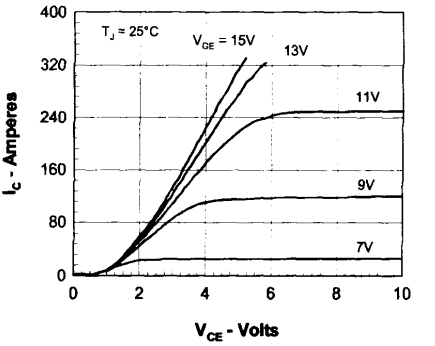


Fig. 2. Extended Output Characteristics

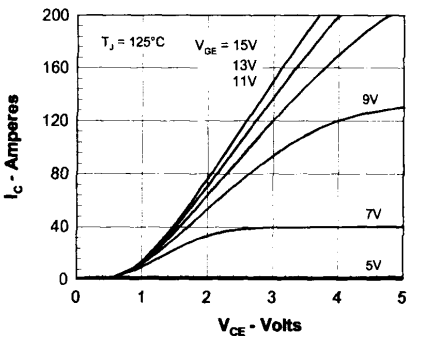


Fig. 3. Saturation Voltage Characteristics

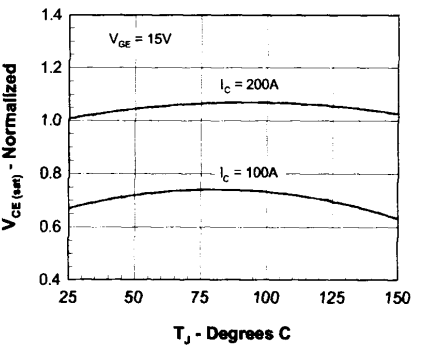


Fig. 4. Temperature Dependence of $V_{CE(sat)}$

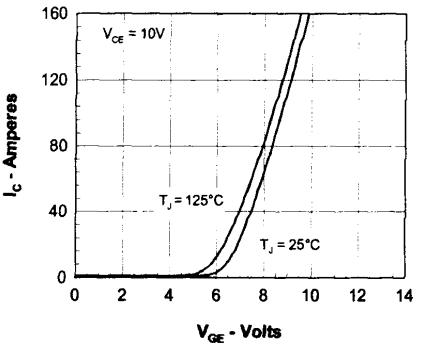


Fig. 5. Turn-off Safe Operating Area

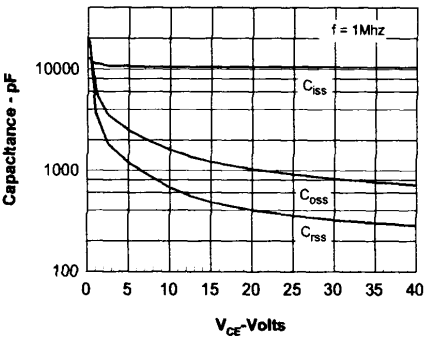


Fig. 6. Temperature Dependence of BV_{CES} & $V_{GE(th)}$