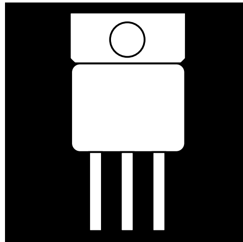
OM6516SC
OM6520SC

INSULATED GATE BIPOLAR TRANSISTOR (IGBT) IN A HERMETIC TO-258AA PACKAGE



1000 Volt, 25 Amp, N-Channel IGBT In A Hermetic Metal Package

FEATURES

- Isolated IGBTs In A Hermetic Package
- High Input Impedance
- Low On-Voltage
- High Current Capability
- High Switching Speed
- Low Tail Current
- Available With Free Wheeling Diode
- Available Screened To MIL-S-19500, TX, TXV And S Levels

DESCRIPTION

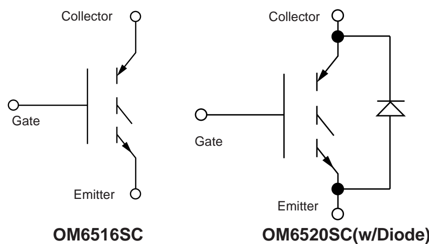
This IGBT power transistor features the high switching speeds of a power MOSFET and the low on-resistance of a bipolar transistor. It is ideally suited for high power switching applications such as frequency converters for 3Ø motors, UPS and high power SMPS.

MAXIMUM RATINGS @ 25°C Unless Specified Otherwise

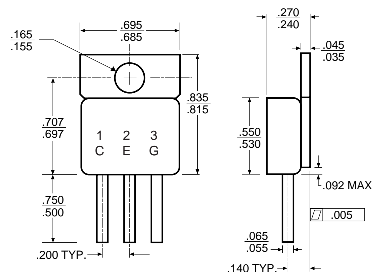
PART NUMBER	I_C (Cont.) @ 90°C, A	$V_{(BR)CES}$ V	$V_{CE\ (sat)}$ (Typ.) V	T_f (Typ.) ns	θ_{JC} °C/W	P_D W	T_J °C
OM6516SC	25	1000	4.0	300	1.0	125	150
OM6520SC	25	1000	4.0	300	1.0	125	150

3.1

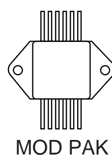
SCHEMATICS



MECHANICAL OUTLINE

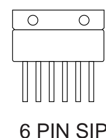


PACKAGE OPTIONS



MOD PAK

NOTE: IGBTs are also available in Z-Tab, dual and quad pak styles - Please call the factory for more information.



6 PIN SIP

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Omnirel
205 Crawford Street, Leominster, MA 01453 USA (508) 534-5776 FAX (508) 537-4246

PRELIMINARY DATA: OM6516SC

IGBT CHARACTERISTICS

	Parameter - OFF	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	1000			V	$V_{CE} = 0$, $I_C = 250\ \mu A$
I_{CES}	Zero Gate Voltage Drain Current			0.25	mA	V_{CE} = Max. Rat., $V_{GE} = 0$
				1.0	mA	V_{CE} = 0.8 Max. Rat., $V_{GE} = 0$, $T_C = 125°C$
I_{GES}	Gate Emitter Leakage Current			±100	nA	$V_{GE} = \pm 20$ V, $V_{CE} = 0$ V
Parameter - ON						
$V_{GE(th)}$	Gate Threshold Voltage	4.5		6.5	V	$V_{CE} = V_{GE}$, $I_C = 1$ mA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		3.0		V	$V_{GE} = 15$ V, $I_C = 15$ A, $T_C = 25°C$
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		4.0	4.5	V	$V_{GE} = 15$ V, $I_C = 15$ A, $T_C = 125°C$
Dynamic						
g_{fs}	Forward Transductance	5.5			S	$V_{CE} = 20$ V, $I_C = 15$ A
C_{ies}	Input Capacitance		2000		pF	$V_{GE} = 0$
C_{oes}	Output Capacitance		160		pF	$V_{CE} = 25$ V
C_{res}	Reverse Transfer Capacitance		65		pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time		50		nS	$V_{CC} = 600$ V, $I_C = 15$ A
t_r	Rise Time		200		nS	$V_{GE} = 15$ V, $R_g = 3.3$,
$T_{d(off)}$	Turn-Off Delay Time		200		nS	$T_j = 125°C$
t_f	Fall Time		300		nS	
Switching-Inductive Load						
$T_{d(off)}$	Turn-Off Delay Time		200		nS	$V_{CEclamp} = 600$ V, $I_C = 15$ A
t_f	Fall Time		200		nS	$V_{GE} = 15$ V, $R_g = 3.3$
E_{off}	Turn-Off Losses		1.5		mWs	L = 1 mH, $T_j = 125°C$

PRELIMINARY DATA: OM6520SC

IGBT CHARACTERISTICS

	Parameter - OFF (see Note 1)	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	1000			V	$V_{CE} = 0$, $I_C = 250\ \mu A$
I_{CES}	Zero Gate Voltage Drain Current			0.25	mA	V_{CE} = Max. Rat., $V_{GE} = 0$
				1.0	mA	V_{CE} = 0.8 Max. Rat., $V_{GE} = 0$, $T_C = 125°C$
I_{GES}	Gate Emitter Leakage Current			±100	nA	$V_{GE} = \pm 20$ V, $V_{CE} = 0$ V
Parameter - ON						
$V_{GE(th)}$	Gate Threshold Voltage	4.5		6.5	V	$V_{CE} = V_{GE}$, $I_C = 1$ mA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		3.0		V	$V_{GE} = 15$ V, $I_C = 15$ A, $T_C = 25°C$
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		4.0	4.5	V	$V_{GE} = 15$ V, $I_C = 15$ A, $T_C = 125°C$
Dynamic						
g_{fs}	Forward Transductance	5.5			S	$V_{CE} = 20$ V, $I_C = 15$ A
C_{ies}	Input Capacitance		2000		pF	$V_{GE} = 0$
C_{oes}	Output Capacitance		160		pF	$V_{CE} = 25$ V
C_{res}	Reverse Transfer Capacitance		65		pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time		50		nS	$V_{CC} = 600$ V, $I_C = 15$ A
t_r	Rise Time		200		nS	$V_{GE} = 15$ V, $R_g = 3.3$,
$T_{d(off)}$	Turn-Off Delay Time		200		nS	$T_j = 125°C$
t_f	Fall Time		300		nS	
Switching-Inductive Load						
$T_{d(off)}$	Turn-Off Delay Time		200		nS	$V_{CEclamp} = 600$ V, $I_C = 15$ A
t_f	Fall Time		200		nS	$V_{GE} = 15$ V, $R_g = 3.3$
E_{off}	Turn-Off Losses		1.5		mWs	L = 1 mH, $T_j = 125°C$

DIODE CHARACTERISTICS

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_f	Maximum Forward Voltage			1.85	V	$I_F = 30$ A, $T_C = 25°C$
				1.70	V	$I_F = 30$ A, $T_C = 150°C$
I_r	Maximum Reverse Current			500	µA	$V_R = 1000$ V, $T_C = 25°C$
				7.0	mA	$V_R = 800$ V, $T_C = 125°C$
t_{rr}	Reverse Recovery Time			50	nS	$I_F = 1$ A, $d_i / d_t = -15$ A µ/S, $V_R = 30$ V, $T_j = 25°C$

Note 1: Limited by diode I_r characteristic.

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