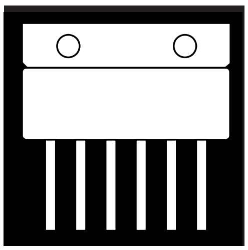
INSULATED GATE BIPOLAR TRANSISTOR (IGBT) IN A HERMETIC ISOLATED SIP PACKAGE



1000 Volt, 8 Amp, N-Channel IGBT In A Hermetic Metal Package

FEATURES

- Two Isolated IGBTs In A Hermetic SIP Package
- High Input Impedance
- Low On-Voltage
- High Current Capability
- Fast Turn-Off
- Low Conductive Losses
- Available With Free Wheeling Diodes
- Available Screened To MIL-S-19500, TX, TXV And S Levels

DESCRIPTION

This IGBT power transistor features a high impedance insulated gate and a low on-resistance characteristic of bipolar transistors. These devices are ideally suited for motor drives, UPS converters, power supplies and resonant power converters.

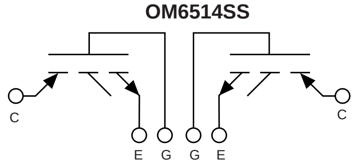
MAXIMUM RATINGS @ 25°C Unless Specified Otherwise

PART NUMBER	I_C (Cont.) @ 90°C, A	$V_{(BR)CES}$ V	$V_{CE\,(sat)}$ (Typ.) V	T_f (Typ.) ns	q_{JC} °C/W	P_D W	T_J °C
OM6514SS	8	1000	2.8	220	1.70	75	150
OM6515SS	8	1000	2.8	220	1.70	75	150

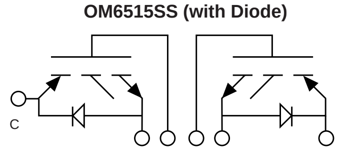
3.1

SCHEMATIC

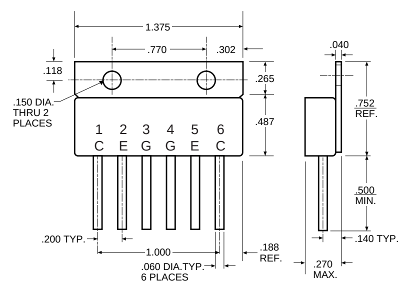
OM6514SS



OM6515SS (with Diode)

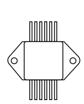


MECHANICAL OUTLINE

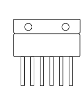


Pin 1: Collector
Pin 2: Emitter
Pin 3: Gate
Pin 4: Gate
Pin 5: Emitter
Pin 6: Collector

PACKAGE OPTIONS



MOD PAK



6 PIN SIP

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

Omnirel

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PRELIMINARY DATA: OM6514SS

IGBT CHARACTERISTICS

Parameter - OFF		Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	1000			V	$V_{CE} = 0$, $I_C = 2$ mA
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	2.0		4.0	V	$V_{CE} = V_{GE}$, $I_C = 2$ mA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		3.4		V	$V_{GE} = 15$ V, $I_C = 8$ A, $T_C = 25°C$
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		2.8	3.0	V	$V_{GE} = 15$ V, $I_C = 8$ A, $T_C = 100°C$
Dynamic						
g_{fs}	Forward Transductance	3.0			S	$V_{CE} = 25$ V, $I_C = 8$ A
C_{ies}	Input Capacitance			1500	pF	$V_{GE} = 0$
C_{oes}	Output Capacitance			150	pF	$V_{CE} = 25$ V
C_{res}	Reverse Transfer Capacitance			50	pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time		60		nS	$V_{CC} = 800$ V, $I_C = 8$ A
t_r	Rise Time		220		nS	$V_{GE} = 15$ V, $R_g = 47$, $T_j = 25°C$
Switching-Inductive Load						
$t_{r(Volt)}$	Off Voltage Rise Time		.8		µS	$V_{CEclamp} = 800$ V, $I_C = 8$ A
t_f	Fall Time		.9		µS	$V_{GE} = 15$ V, $R_g = 47$
t_{cross}	Cross-Over Time		2.2		µS	L = 0.1 mH, $T_j = 100°C$
E_{off}	Turn-Off Losses		6.0		mJ	

PRELIMINARY DATA: OM6515SS

IGBT CHARACTERISTICS

Parameter - OFF (see Note 1)		Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	1000			V	$V_{CE} = 0$, $I_C = 2$ mA
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	2.0		4.0	V	$V_{CE} = V_{GE}$, $I_C = 2$ mA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		3.4		V	$V_{GE} = 15$ V, $I_C = 8$ A, $T_C = 25°C$
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		2.8	3.0	V	$V_{GE} = 15$ V, $I_C = 8$ A, $T_C = 100°C$
Dynamic						
g_{fs}	Forward Transductance	3.0			S	$V_{CE} = 25$ V, $I_C = 8$ A
C_{ies}	Input Capacitance			1500	pF	$V_{GE} = 0$
C_{oes}	Output Capacitance			150	pF	$V_{CE} = 25$ V
C_{res}	Reverse Transfer Capacitance			50	pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time		60		nS	$V_{CC} = 800$ V, $I_C = 8$ A
t_r	Rise Time		220		nS	$V_{GE} = 15$ V, $R_g = 47$, $T_j = 25°C$
Switching-Inductive Load						
$t_{r(Volt)}$	Off Voltage Rise Time		.8		µS	$V_{CEclamp} = 800$ V, $I_C = 8$ A
t_f	Fall Time		.9		µS	$V_{GE} = 15$ V, $R_g = 47$
t_{cross}	Cross-Over Time		2.2		µS	L = 0.1 mH, $T_j = 100°C$
E_{off}	Turn-Off Losses		6.0		mJ	

DIODE CHARACTERISTICS

V_f	Maximum Forward Voltage			3.3	V	$I_F = 12$ A, $T_C = 25°C$
				2.2	V	$I_F = 12$ A, $T_C = 150°C$
I_r	Maximum Reverse Current			500	µA	$V_R = 1000$ V, $T_C = 25°C$
				4.0	mA	$V_R = 800$ V, $T_C = 125°C$
t_{rr}	Reverse Recovery Time			35	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.