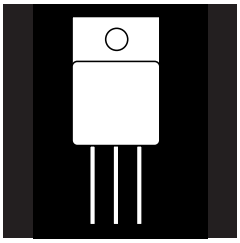
INSULATED GATE BIPOLAR TRANSISTOR (IGBT) IN A HERMETIC TO-254AA PACKAGE



500 Volt, 15 And 20 Amp, N-Channel IGBT In A Hermetic Metal Package

FEATURES

- Isolated Hermetic Metal Package
- High Input Impedance
- Low On-Voltage
- High Current Capability
- Fast Turn-Off
- Available Screened To MIL-S-19500, TX, TXV And S Levels
- Low Conductive Losses
- Ceramic Feedthroughs Available

DESCRIPTION

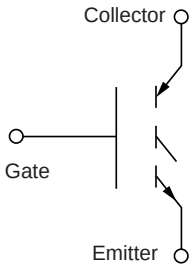
The IGBT power transistor features a high impedance insulated gate and a low on-resistance characteristic of bipolar transistors. These devices are ideally suited for motor drives, UPS converters, power supplies and resonant power converters.

MAXIMUM RATINGS @ 25°C Unless Specified Otherwise

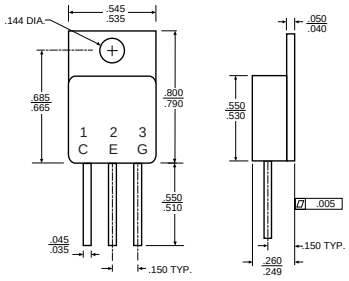
PART NUMBER	I_C (Cont.) @ 90°C, A	$V_{(BR)CES}$ V	$V_{CE\ (sat)}$ (Typ.) V	T_f (Typ.) ns	q_{JC} °C/W	P_D W	T_J °C
OM6505SA	15	500	2.8	400	1.75	72	150
OM6506SA	20	500	2.8	400	1.00	125	150

3.1

SCHEMATIC



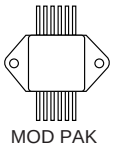
MECHANICAL OUTLINE



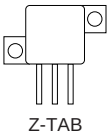
PIN CONNECTION

Pin 1: Collector
Pin 2: Emitter
Pin 3: Gate

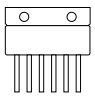
PACKAGE OPTIONS



MOD PAK



Z-TAB



6 PIN SIP

Standard Products are supplied with glass feedthroughs. For ceramic feedthroughs, add the letter "C" to the part number. Example - OMXXXXCSA.
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: OM6505SA

IGBT CHARACTERISTICS

Parameter - OFF		Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	500			V	V_{CE} = 0 I_C = 250 µA
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} = ±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 = 250 µA
$V_{CE(sat)}$	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		2.8	3.0	V	V_{GE} = 15 V, I_C = 15 A T_C = 100°C
Dynamic						
g_{fs}	Forward Transductance	5.0			S	V_{CE} = 20 V, I_C = 15 A
C_{ies}	Input Capacitance		1700		pF	V_{GE} = 0
C_{oes}	Output Capacitance		215		pF	V_{CE} = 25 V
C_{res}	Reverse Transfer Capacitance		115		pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time		60		nS	V_{CC} = 400 V, I_C = 15 A
t_r	Rise Time		240		nS	V_{GE} = 15 V, R_g = 47
Switching-Inductive Load						
$t_{r(Volt)}$	Off Voltage Rise Time		.55		µS	$V_{CEclamp}$ = 400 V, I_C = 15 A
t_f	Fall Time		.60		µS	V_{GE} = 15 V, R_g = 100
t_{cross}	Cross-Over Time		1.2		µS	L = 0.1 mH, T_j = 100°C
E_{off}	Turn-Off Losses		3.0		mJ	

PRELIMINARY DATA: OM6506SA

IGBT CHARACTERISTICS

Parameter - OFF		Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)CES}$	Collector Emitter Breakdown Voltage	500			V	V_{CE} = 0 I_C = 250 µA
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 = 100°C
I_{GES}	Gate Emitter Leakage Current			±100	nA	V_{GE} = ±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 = 250 µA
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		3.0		V	V_{GE} = 15 V, I_C = 20 A T_C = 25°C
$V_{CE(sat)}$	Collector Emitter Saturation Voltage		2.8	3.0	V	V_{GE} = 15 V, I_C = 20 A T_C = 100°C
Dynamic						
g_{fs}	Forward Transductance	8.0			S	V_{CE} = 15 V, I_C = 20 A
C_{ies}	Input Capacitance			3500	pF	V_{GE} = 0
C_{oes}	Output Capacitance			250	pF	V_{CE} = 25 V
C_{res}	Reverse Transfer Capacitance			50	pF	f = 1 mHz
Switching-Resistive Load						
$T_{d(on)}$	Turn-On Time			100	nS	V_{CC} = 400 V, I_C = 20 A
t_r	Rise Time			200	nS	V_{GE} = 15 V, R_g = 100
$T_{d(off)}$	Turn-Off Delay Time			1.0	µS	T_j = 125°C
t_f	Fall Time			2.0	µS	
Switching-Inductive Load						
$T_{d(off)}$	Turn-Off Delay Time			1.0	nS	$V_{CEclamp}$ = 400 V, I_C = 20 A
t_r	Current Fall Time			3.0	µS	V_{GE} = 15 V, R_g = 100
						L = 0.1 mH, T_j = 125°C