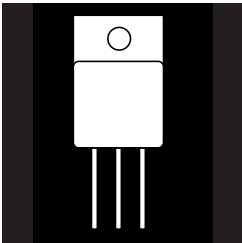


INSULATED GATE BIPOLAR TRANSISTOR (IGBT) IN A HERMETIC TO-254AA PACKAGE



500 Volt, 5 And 10 Amp, N-Channel IGBT
With a Soft Recovery Diode
In A Hermetic Metal Package

FEATURES

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

DESCRIPTION

This power module includes an IGBT power transistor which features a high impedance insulated gate and the low on-resistance characteristics of bipolar transistor with a free wheeling diode connected across the emitter and collector. 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
OM6508SA	5	500	2.8	400	3.8	35	150
OM6509SA	10	500	2.8	400	3.0	42	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.

PRELIMINARY DATA: OM6508SA

IGBT CHARACTERISTICS

Parameter - OFF (see Note 1)	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)CES} Collector Emitter Breakdown Voltage	500			V	V _{CE} = 0 I _C = 250 μ 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			$\pm$ 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 = 250 μ A
V _{CE(sat)} Collector Emitter Saturation Voltage		3.0		V	V _{GE} = 15 V, I _C = 5 A T _C = 25°C
V _{CE(sat)} Collector Emitter Saturation Voltage		2.8	3.0	V	V _{GE} = 15 V, I _C = 5 A T _C = 100°C
Dynamic					
g _{fs} Forward Transductance		2.0		S	V _{CE} = 20 V, I _C = 5 A
C _{ies} Input Capacitance		260		pF	V _{GE} = 0
C _{oes} Output Capacitance		50		pF	V _{CE} = 25 V
C _{res} Reverse Transfer Capacitance		20		pF	f = 1 mHz
Switching-Resistive Load					
T _{d(on)} Turn-On Time		37		nS	V _{CC} = 400 V, I _C = 5 A
t _r Rise Time		150		nS	V _{GE} = 15 V, R _g = 47
Switching-Inductive Load					
t _{r(Volt)} Off Voltage Rise Time		.35		μ S	V _{CEclamp} = 400 V, I _C = 5 A
t _f Fall Time		.81		μ S	V _{GE} = 15 V, R _g = 100
t _{cross} Cross-Over Time		1.2		μ S	L = 0.1 mH, T _J = 100°C
E _{off} Turn-Off Losses		.95		mJ	
DIODE CHARACTERISTICS					
V _F Maximum Forward Voltage			1.5	V	I _F = 8 A, T _C = 25°C
			1.4	V	I _F = 8 A, T _C = 150°C
I _r Maximum Reverse Current			150	μ A	V _R = 600 V, T _C = 25°C
			1.5	mA	V _R = 480 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.

PRELIMINARY DATA: OM6509SA

IGBT CHARACTERISTICS

Parameter - OFF (see Note 1)	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)CES} Collector Emitter Breakdown Voltage	500			V	V _{CE} = 0 I _C = 250 μ 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			$\pm$ 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 = 250 μ A
V _{CE(sat)} Collector Emitter Saturation Voltage		3.0	2.7	V	V _{GE} = 15 V, I _C = 10 A T _C = 25°C
V _{CE(sat)} Collector Emitter Saturation Voltage		2.8	3.0	V	V _{GE} = 15 V, I _C = 10 A T _C = 100°C
Dynamic					
g _{fs} Forward Transductance	2.5			S	V _{CE} = 20 V, I _C = 10 A
C _{ies} Input Capacitance			950	pF	V _{GE} = 0
C _{oes} Output Capacitance			140	pF	V _{CE} = 25 V
C _{res} Reverse Transfer Capacitance			80	pF	f = 1 mHz
Switching-Resistive Load					
T _{d(on)} Turn-On Time			150	nS	V _{CC} = 400 V, I _C = 10 A V _{GE} = 15 V, R _g = 100
T _r Rise Time			1000	nS	
T _{d(off)} Turn-Off Delay Time			700	nS	
T _f Fall Time			1500	nS	
Switching-Inductive Load					
T _{d(off)} Turn-Off Delay Time			1.2	μ S	V _{CEclamp} = 350 V, I _C = 10 A
t _f Fall Time			1.5	μ S	V _{GE} = 15 V, R _g = 100
t _{cross} Cross-Over Time			2.0	μ S	L = 180 μ H, T _J = 100°C
E _{off} Turn-Off Losses			4.0	mJ	
DIODE CHARACTERISTICS					
V _F Maximum Forward Voltage			1.4	V	I _F = 16 A, T _C = 25°C
			1.5	V	I _F = 16 A, T _C = 150°C
I _r Maximum Reverse Current			500	μ A	V _R = 600 V, T _C = 25°C
			3.0	mA	V _R = 480 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.