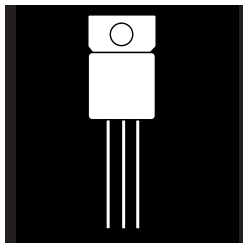


# INSULATED GATE BIPOLAR TRANSISTOR (IGBT) IN A HERMETIC TO-257AA PACKAGE



**500 Volt, 5 And 10 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
- Low Conductive Losses
- Available Screened to MIL-S-19500, TX, TXV And S Levels

## DESCRIPTION

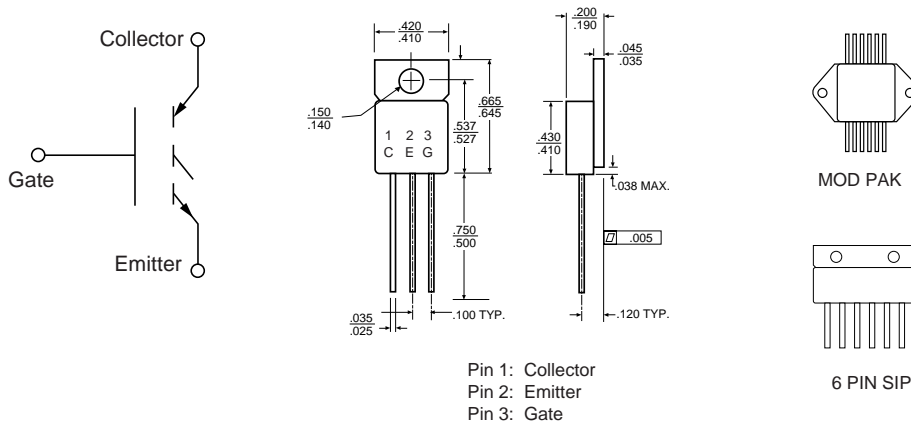
The IGBT power transistor features a high impedance insulated gate and a low on-resistance characteristic of bipolar transistors. These devices are ideally suited for motor drives, UPS converters, power supplies and resonant power converters.

## MAXIMUM RATINGS @ 25°C Unless Specified Otherwise

PART NUMBER	I <sub>c</sub> (Cont.) @ 90°C, A	V <sub>(BR)CES</sub> V	V <sub>CE(sat)</sub> (Typ.) V	T <sub>r</sub> (Typ.) ns	α <sub>jc</sub> °C/W	P <sub>D</sub> W	T <sub>J</sub> °C
OM6501ST	5	500	2.8	400	3.8	35	150
OM6502ST	10	500	2.8	400	3.0	42	150

3.1

## SCHMATIC    MECHANICAL OUTLINE    PACKAGE OPTIONS



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

**PRELIMINARY DATA: OM6501ST**
**IGBT CHARACTERISTICS**

Parameter - OFF	Min.	Typ.	Max.	Units	Test Conditions
V <sub>(BR)CES</sub> Collector Emitter Breakdown Voltage	500			V	V <sub>CE</sub> = 0 I <sub>C</sub> = 250 μA
I <sub>CES</sub> Zero Gate Voltage Drain Current			0.25	mA	V <sub>CE</sub> = Max. Rat., V <sub>GE</sub> = 0
			1.0	mA	V <sub>CE</sub> = 0.8 Max. Rat., V <sub>GE</sub> = 0 T <sub>C</sub> = 125°C
I <sub>GES</sub> Gate Emitter Leakage Current			±100	nA	V <sub>GE</sub> = ±20 V V <sub>CE</sub> = 0 V
<b>Parameter - ON</b>					
V <sub>GE(th)</sub> Gate Threshold Voltage	2.0		4.0	V	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 250 μA
V <sub>CE(sat)</sub> Collector Emitter Saturation Voltage		3.0		V	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 5 A T <sub>C</sub> = 25°C
V <sub>CE(sat)</sub> Collector Emitter Saturation Voltage		2.8	3.0	V	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 5 A T <sub>C</sub> = 100°C
<b>Dynamic</b>					
g <sub>fs</sub> Forward Transductance		2.0		S	V <sub>CE</sub> = 20 V, I <sub>C</sub> = 5 A
C <sub>ies</sub> Input Capacitance		260		pF	V <sub>GE</sub> = 0
C <sub>oes</sub> Output Capacitance		50		pF	V <sub>CE</sub> = 25 V
C <sub>res</sub> Reverse Transfer Capacitance		20		pF	f = 1 MHz
<b>Switching-Resistive Load</b>					
T <sub>d(on)</sub> Turn-On Time		37		nS	V <sub>CC</sub> = 400 V, I <sub>C</sub> = 5 A
t <sub>r</sub> Rise Time		150		nS	V <sub>GE</sub> = 15 V, R <sub>g</sub> = 47
<b>Switching-Inductive Load</b>					
t <sub>(voff)</sub> Off Voltage Rise Time		.35		μS	V <sub>CEclamp</sub> = 400 V, I <sub>C</sub> = 5 A
t <sub>f</sub> Fall Time		.81		μS	V <sub>GE</sub> = 15 V, R <sub>g</sub> = 100
t <sub>cross</sub> Cross-Over Time		1.2		μS	L = 0.1 mH, T <sub>j</sub> = 100°C
E <sub>off</sub> Turn-Off Losses		.95		mJ	

**PRELIMINARY DATA: OM6502ST**
**IGBT CHARACTERISTICS**

Parameter - OFF	Min.	Typ.	Max.	Units	Test Conditions
V <sub>(BR)CES</sub> Collector Emitter Breakdown Voltage	500			V	V <sub>CE</sub> = 0 I <sub>C</sub> = 250 μA
I <sub>CES</sub> Zero Gate Voltage Drain Current			0.25	mA	V <sub>CE</sub> = Max. Rat., V <sub>GE</sub> = 0
			1.0	mA	V <sub>CE</sub> = 0.8 Max. Rat., V <sub>GE</sub> = 0 T <sub>C</sub> = 125°C
I <sub>GES</sub> Gate Emitter Leakage Current			±100	nA	V <sub>GE</sub> = ±20 V V <sub>CE</sub> = 0 V
<b>Parameter - ON</b>					
V <sub>GE(th)</sub> Gate Threshold Voltage	2.0		4.0	V	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 250 μA
V <sub>CE(sat)</sub> Collector Emitter Saturation Voltage		3.0		V	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 10 A T <sub>C</sub> = 25°C
V <sub>CE(sat)</sub> Collector Emitter Saturation Voltage		2.8	3.0	V	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 10 A T <sub>C</sub> = 100°C
<b>Dynamic</b>					
g <sub>fs</sub> Forward Transductance	2.5			S	V <sub>CE</sub> = 20 V, I <sub>C</sub> = 10 A
C <sub>ies</sub> Input Capacitance			950	pF	V <sub>GE</sub> = 0
C <sub>oes</sub> Output Capacitance			140	pF	V <sub>CE</sub> = 25 V
C <sub>res</sub> Reverse Transfer Capacitance			80	pF	f = 1 MHz
<b>Switching-Resistive Load</b>					
T <sub>d(on)</sub> Turn-On Time			150	nS	V <sub>CC</sub> = 400 V, I <sub>C</sub> = 10 A
t <sub>r</sub> Rise Time			1000	nS	
T <sub>d(off)</sub> Turn-Off Delay Time			700	nS	V <sub>GE</sub> = 15 V, R <sub>g</sub> = 100
t <sub>f</sub> Fall Time			1500	nS	
<b>Switching-Inductive Load</b>					
T <sub>d(off)</sub> Turn-Off Delay Time			1.2	μS	V <sub>CEclamp</sub> = 350 V, I <sub>C</sub> = 10 A
t <sub>f</sub> Fall Time			1.5	μS	V <sub>GE</sub> = 15 V, R <sub>g</sub> = 100
t <sub>cross</sub> Cross-Over Time			2.0	μS	L = 180 μH, T <sub>j</sub> = 100°C
E <sub>off</sub> Turn-Off Losses			4.0	mJ	