



**HIGH CURRENT MOSIGBT**  
ADVANCE DATA SHEET\*

**IXGH60N50, 60**

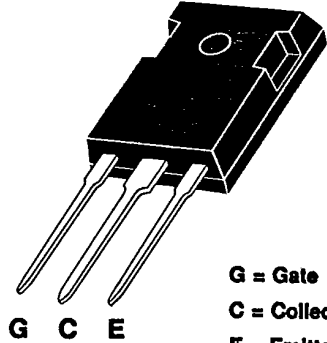
T-39-15

**MAXIMUM RATINGS**

Parameter	Sym.	IXGH60N50,50A	IXGH60N60,60A	Unit
Collector-Emitter Voltage (1)	V <sub>CES</sub>	500	600	V <sub>dc</sub>
Collector-Gate Voltage (R <sub>GE</sub> =1.0MΩ) (1)	V <sub>CGR</sub>	500	600	V <sub>dc</sub>
Gate-Emitter Voltage Continuous	V <sub>GE</sub>		±20	V <sub>dc</sub>
Gate-Emitter Voltage Transient	V <sub>GEM</sub>		±30	V
Collector Current Continuous (T <sub>c</sub> = 25 °C)	I <sub>C</sub>		75	A <sub>dc</sub>
Collector Current Continuous (T <sub>c</sub> = 90 °C)	I <sub>C</sub>		60	A <sub>dc</sub>
Collector Current Pulsed (3)	I <sub>CM</sub>		200	A
Total Power Dissipation	P <sub>D</sub>		310	W
Power Dissipation Derating > 25 °C			2.5	W/°C
Operating and Storage Temperature	T <sub>J</sub> & T <sub>stg</sub>		-65 to +150	°C
Thermal Resistance	R <sub>thJC</sub>		0.4	°C/W
Max. Lead Temp. for Soldering	T <sub>L</sub>		300 (1.6 mm from case for 10 sec.)	°C

60 Amps, 500-600 Volts

TO-247



G = Gate  
C = Collector  
E = Emitter

**ELECTRICAL CHARACTERISTICS** T<sub>c</sub> = 25 °C unless otherwise specified

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
V <sub>(BR)CES</sub> Collector-Emitter Breakdown Voltage	60N50,50A 60N60,60A	500 600	— —	— —	V V	V <sub>GE</sub> = 0 V I <sub>C</sub> = 250 μA
V <sub>GE(th)</sub> Gate Threshold Voltage	ALL	2.5	—	5.0	V	V <sub>CE</sub> = V <sub>GE</sub> , I <sub>C</sub> = 250 μA
I <sub>GES</sub> Gate-Emitter Leakage	ALL	—	—	100	nA	V <sub>GE</sub> = ±20 V <sub>dc</sub>
I <sub>CES</sub> Zero Gate Voltage Collector Current	ALL	— —	— —	200 1000	μA μA	V <sub>CE</sub> = Rated V <sub>(BR)CES</sub> x 0.8, V <sub>GE</sub> = 0 V V <sub>CE</sub> = Rated V <sub>(BR)CES</sub> x 0.8, V <sub>GE</sub> = 0 V, T <sub>c</sub> = 125 °C
V <sub>CE(sat)</sub> Collector-Emitter Saturation Voltage	60N50,60 60N50A,60A	— —	— —	2.5 3.0	V V	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 60A
g <sub>fs</sub> Forward Transconductance (2)	ALL	15	30	—	S	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 30A
C <sub>iss</sub> Input Capacitance	ALL	—	4800	5500	pF	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = 25 V, f = 1.0MHz
C <sub>oss</sub> Output Capacitance	ALL	—	400	500	pF	
C <sub>rss</sub> Reverse Transfer Capacitance	ALL	—	200	250	pF	

**SWITCHING CHARACTERISTICS**

t <sub>d(on)</sub> Turn-On Delay Time	ALL	—	—	200	nS	Resistive Load, T <sub>J</sub> = 125 °C (4) I <sub>C</sub> = 60A, V <sub>CE</sub> = Rated V <sub>(BR)CES</sub> x 0.8 V <sub>GE</sub> = 15 V R <sub>G</sub> = 10 Ω
t <sub>r</sub> Current Rise Time	ALL	—	—	200	nS	
t <sub>d(off)</sub> Turn-Off Delay Time (4)	ALL	—	—	1.0	μS	
t <sub>f</sub> Current Fall Time (4)	60N50,60 60N50A,60A	— —	— —	2.0 0.5	μS μS	
t <sub>d(off)</sub> Turn-Off Delay Time (4)	ALL	—	—	1.0	μS	Inductive Load, T <sub>J</sub> = 125 °C (4) L = 300 μH, I <sub>C</sub> = 60A V <sub>CE</sub> (Clamp) = Rated V <sub>(BR)CES</sub> x 0.8 V <sub>GE</sub> = 15 V, R <sub>G</sub> = 10 Ω
t <sub>f</sub> Current Fall Time (4)	60N50,60 60N50A,60A	— —	2.0 0.5	3.0 0.8	μS μS	

(1) T<sub>J</sub> = 25 °C to 150 °C  
 (2) Pulse Test: Pulse width ≤ 300 μS, duty cycle ≤ 2%  
 (3) Repetitive Rating: Pulse width limited by max. junction temperature  
 (4) Switching times may increase for V<sub>CE</sub> (Clamp) > 0.8 x V<sub>(BR)CES</sub> or T<sub>J</sub> < 60 °C

\*The data supplied herein reflects the Design Technical Objective Specification. The subject products are in Product Development. IXYS reserves the right to change limits, test conditions, and dimensions without notice.