Data Sheet #: 3501A December 1988

IXYS HIGH CURRENT MOSIGBT

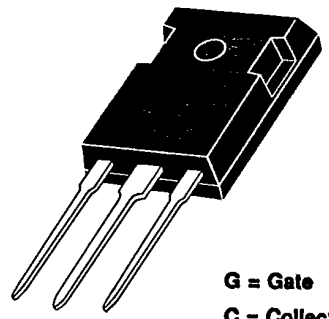
ADVANCE DATA SHEET*

IXGH60N50, 60

T-39-15

60 Amps, 500-600 Volts

TO-247



G = Gate
C = Collector
E = Emitter

MAXIMUM RATINGS

Parameter	Sym.	IXGH60N50,50A	IXGH60N60,60A	Unit
Collector-Emitter Voltage (1)	V_{CES}	500	600	V_{dc}
Collector-Gate Voltage (R_{GE}=1.0MΩ) (1)	V_{CGR}	500	600	V_{dc}
Gate-Emitter Voltage Continuous	V_{GE}	±20		V_{dc}
Gate-Emitter Voltage Transient	V_{GEM}	±30		V
Collector Current Continuous (T_C = 25 °C)	I_C	75		A_{dc}
Collector Current Continuous (T_C = 90 °C)	I_C	60		A_{dc}
Collector Current Pulsed (3)	I_{CM}	200		A
Total Power Dissipation	P_D	310		W
Power Dissipation Derating > 25 °C		2.5		W/°C
Operating and Storage Temperature	T_J & T_{stg}	-65 to +150		°C
Thermal Resistance	R_{thJC}	0.4		°C/W
Max. Lead Temp. for Soldering	T_L	300 (1.6 mm from case for 10 sec.)		°C

ELECTRICAL CHARACTERISTICS T_C = 25 °C unless otherwise specified

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

SWITCHING CHARACTERISTICS

$t_{d(on)}$	Turn-On Delay Time	ALL	—	—	200	nS	Resistive Load, T_J = 125 °C (4) I_C = 60A, V_{CE} = Rated $V_{(BR)CES}$ x 0.8 V_{GE} = 15 V R_G = 10 Ω
t_r	Current Rise Time	ALL	—	—	200	nS	
$t_{d(off)}$	Turn-Off Delay Time (4)	ALL	—	—	1.0	µS	
t_f	Current Fall Time (4)	60N50,60 60N50A,60A	— —	— —	2.0 0.5	µS µS	
$t_{d(off)}$	Turn-Off Delay Time (4)	ALL	—	—	1.0	µS	Inductive Load, T_J = 125 °C (4) L = 300 µH, I_C = 60A V_{CE} (Clamp) = Rated $V_{(BR)CES}$ x 0.8 V_{GE} = 15 V, R_G = 10 Ω
t_f	Current Fall Time (4)	60N50,60 60N50A,60A	— —	2.0 0.5	3.0 0.8	µS µS	

(1) T_J = 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_{CE} (Clamp) > 0.8 x $V_{(BR)CES}$ or T_J < 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.

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