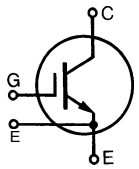
IXYS

HiPerFAST™ IGBT

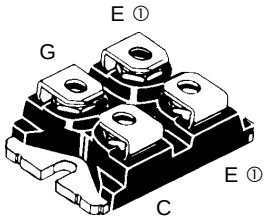
	V_{CES}	I_{C25}	$V_{CE(sat)}$
IXGN 200N60	**600 V**	**200 A**	**2.5 V**
IXGN 200N60A	**600 V**	**200 A**	**2.7 V**



Symbol	Test Conditions		Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C		600	V
V_{CGR}	T_J = 25°C to 150°C; R_{GE} = 1 MΩ		600	V
V_{GES}	Continuous		±20	V
V_{GEM}	Transient		±30	V
I_{C25}	T_C = 25°C		200	A
I_{C90}	T_C = 90°C		100	A
I_{CM}	T_C = 25°C, 1 ms		300	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 22 Ω Clamped inductive load, L = 30 μH		I_{CM} = 100 @ 0.8 V_{CES}	A
P_C	T_C = 25°C		600	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
V_{ISOL}	50/60 Hz I_{ISOL} ≤ 1 mA	t = 1 min t = 1 s	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque (M4)		1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight			30	g

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{CES}	I_C = 250 μA, V_{GE} = 0 V		600			V
$V_{GE(th)}$	I_C = 10 mA, V_{CE} = V_{GE}		2.5		6	V
I_{CES}	V_{CE} = 0.8 • V_{CES} V_{GE} = 0 V	T_J = 25°C T_J = 125°C			200 2	μA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±400	nA
$V_{CE(sat)}$	I_C = I_{C90}, V_{GE} = 15 V	200N60 200N60A			2.5 2.7	V V

SOT-227B, miniBLOC



G = Gate, C = Collector, E = Emitter
① either emitter terminal can be used as Main or Kelvin Emitter

Features
- International standard package miniBLOC (ISOTOP compatible)
- Aluminium nitride isolation
  - high power dissipation
- Isolation voltage 3000 V~
- Very high current, fast switching IGBT
- Low $V_{CE(sat)}$
  - for minimum on-state conduction losses
- MOS Gate turn-on
  - drive simplicity
- Low collector-to-case capacitance (< 50 pF)
- Low package inductance (< 5 nH)
  - easy to drive and to protect

Applications
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

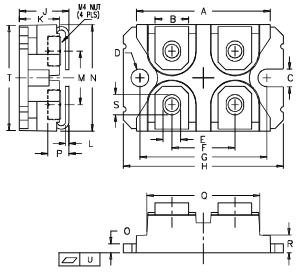
Advantages
- Easy to mount with 2 screws
- Space savings
- High power density

IXYS reserves the right to change limits, test conditions, and dimensions.

92776I (1/98)

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	I_C = 60 A; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %		40	57		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz			9000		pF
C_{oes}				600		pF
C_{res}				305		pF
Q_g	$I_C = I_{C90}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}			465		nC
Q_{ge}				52		nC
Q_{gc}				228		nC
$t_{d(on)}$	**Inductive load, T_J = 25°C** $I_C = I_{C90}$, V_{GE} = 15 V, L = 30 µH, V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 2.4 Ω Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G			100		ns
t_{ri}				100		ns
E_{on}				2.4		mJ
$t_{d(off)}$		200N60		800	1100	ns
		200N60A		700	950	ns
t_{fi}		200N60		350	500	ns
		200N60A		200	280	ns
E_{off}		200N60		14.4		mJ
		200N60A		9.6		mJ
$t_{d(on)}$	**Inductive load, T_J = 125°C** (IXGN 200N60A) $I_C = I_{C90}$, V_{GE} = 15 V, L = 30 µH V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 2.4 Ω Remarks: Switching times may increase for V_{CE} (Clamp) > 0.8 • V_{CES}, higher T_J or increased R_G			100		ns
t_{ri}				200		ns
E_{on}				4.8		mJ
$t_{d(off)}$				780		ns
t_{fi}				250		ns
E_{off}				14.4		mJ
R_{thJC}					0.21	K/W
R_{thCK}				0.05		K/W

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

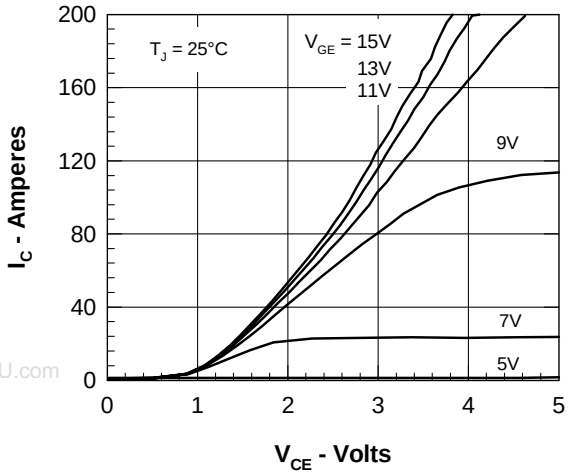


Fig. 1. Saturation Voltage Characteristics

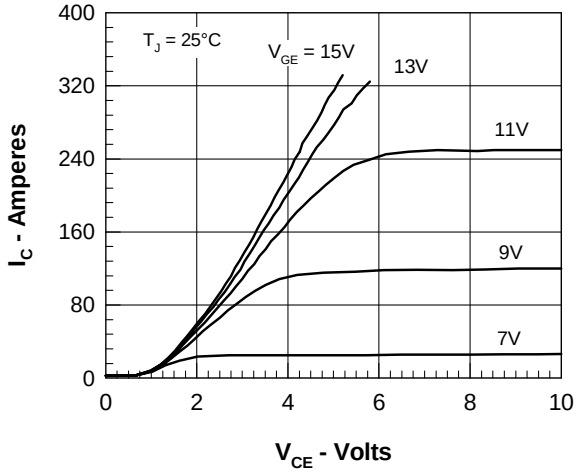


Fig. 2. Extended Output Characteristics

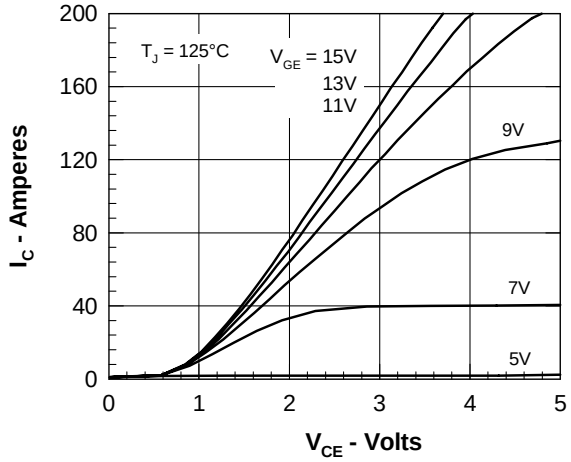


Fig. 3. Saturation Voltage Characteristics

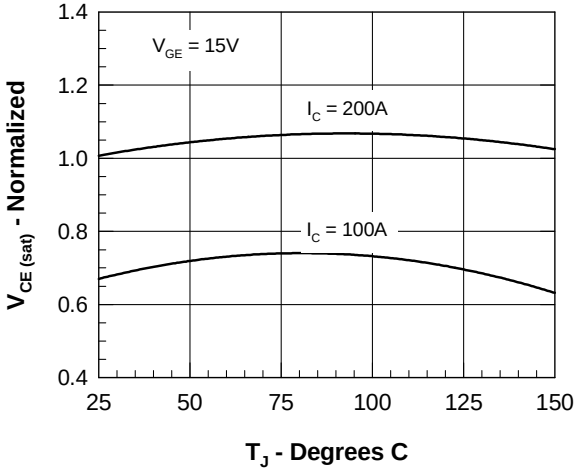


Fig. 4. Temperature Dependence of $V_{CE(sat)}$

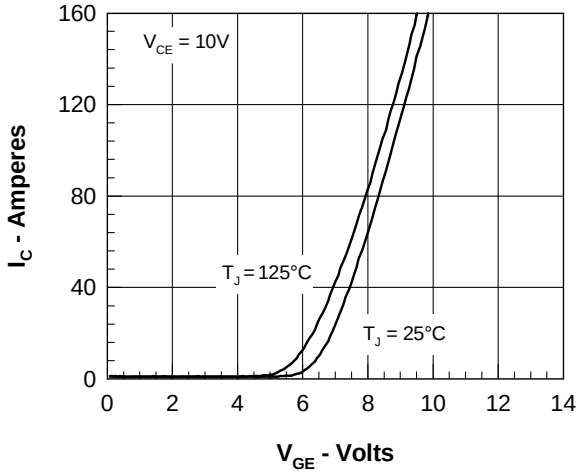


Fig. 5. Turn-off Safe Operating Area

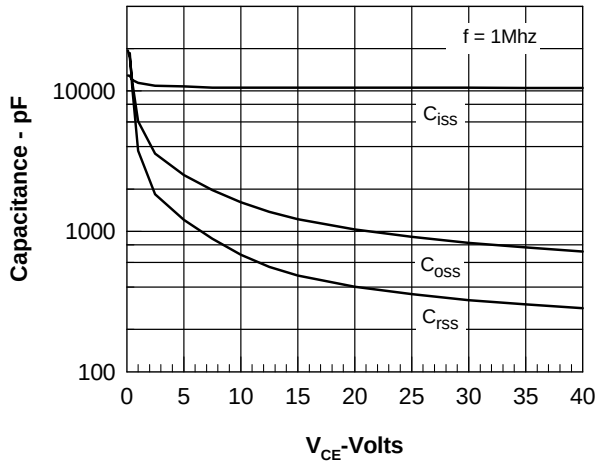


Fig. 6. Temperature Dependence of BV_{CES} & $V_{GE(th)}$

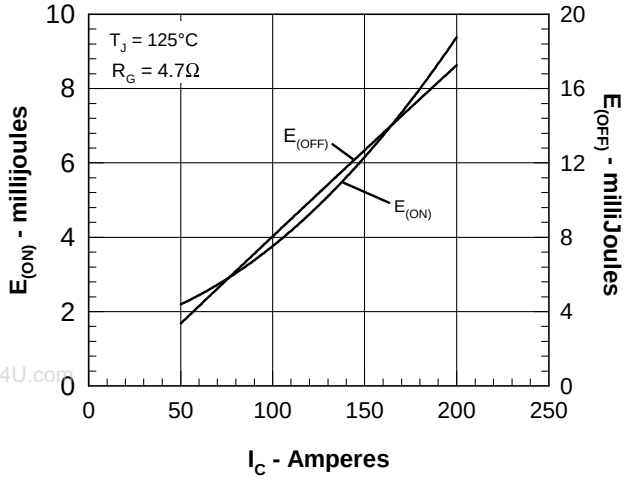


Fig. 7. Dependence of tfi and E_{OFF} on I_C.

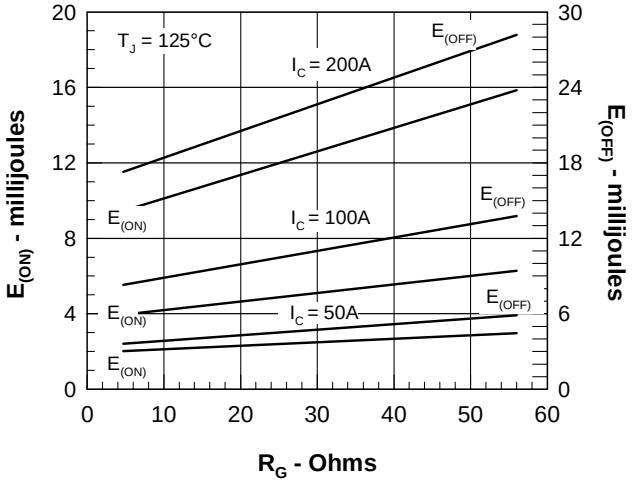


Fig. 8. Dependence of tfi and E_{OFF} on R_G.

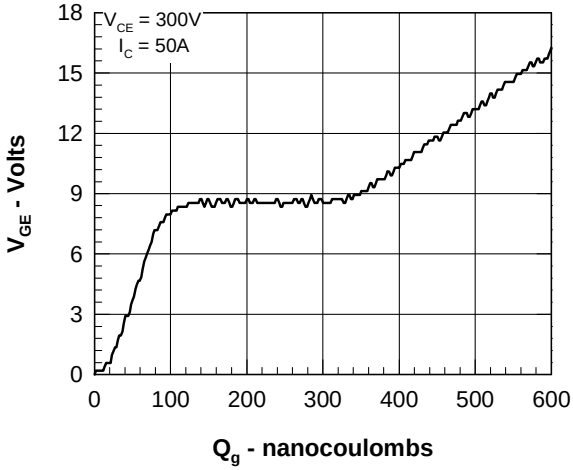


Fig. 9. Gate Charge

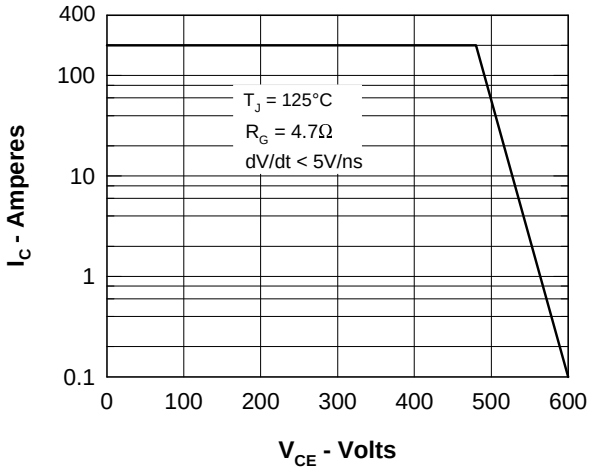


Fig. 10. Junction Capacitance Curves

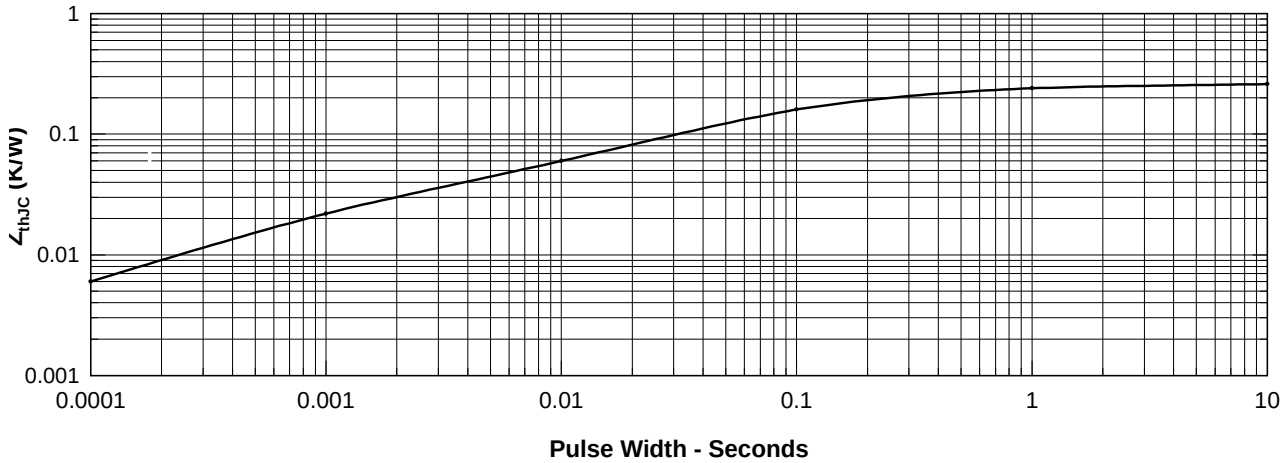


Fig. 11. Transient Thermal Resistance