IXYS

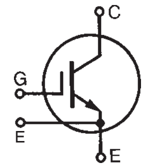
IGBT

Optimized for Switching up to 5 kHz

Preliminary Data Sheet

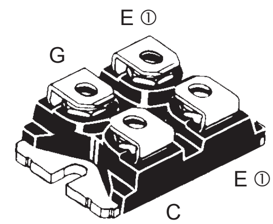
IXGN 200N60A2

V_{CES} = 600 V
I_{C25} = 200 A
$V_{CE(sat)}$ = 1.35 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_{C110}	T_C = 110°C	100	A
I_{CM}	T_C = 25°C, 1 ms	400	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 125°C, R_G = 2.0 Ω Clamped inductive load	I_{CM} = 200 @ 0.8 V_{CES}	A
P_C	T_C = 25°C	700	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
V_{ISOL}	50/60 Hz t = 1 min I_{ISOL} ≤ 1 mA t = 1 s	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque (M4)	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
Weight		30	g

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
- Aluminium nitride isolation
  - high power dissipation
- Isolation voltage 3000 V~
- Very high current 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

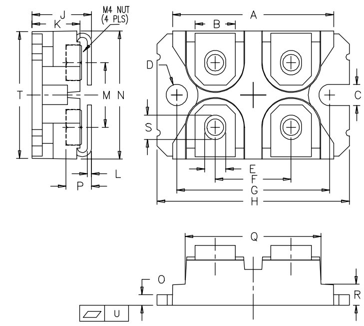
Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{GE(th)}$	I_C = 1 mA, V_{CE} = V_{GE}		2.5		5.5	V
I_{CES}	V_{CE} = V_{CES} V_{GE} = 0 V	T_J = 25°C T_J = 125°C			50 2	µA mA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±400	nA
$V_{CE(sat)}$	I_C = I_{C110}, V_{GE} = 15 V			1.2	1.35	V

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

Symbol	Test Conditions	min.	typ.	max.	Unit
	Characteristic Values (T_J = 25°C, unless otherwise specified)				
g_{fs}	I_C = 60 A; V_{CE} = 10 V, Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	70	106		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		9900		pF
C_{oes}			740		pF
C_{res}			190		pF
Q_g	$I_C = I_{C110}$, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		480		nC
Q_{ge}			63		nC
Q_{gc}			169		nC
$t_{d(on)}$			60		ns
t_{ri}	**Inductive load, T_J = 25°C**		45		ns
$t_{d(off)}$	$I_C = I_{C110}$, V_{GE} = 15 V		360		ns
t_{fi}	V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 2.0 Ω		250		ns
E_{off}			5		mJ
$t_{d(on)}$			60		ns
t_{ri}	**Inductive load, T_J = 125°C**		60		ns
E_{on}	$I_C = I_{C110}$, V_{GE} = 15 V		3.0		mJ
$t_{d(off)}$	V_{CE} = 0.8 V_{CES}, $R_G = R_{off}$ = 2.4 Ω		290		ns
t_{fi}			660		ns
E_{off}			12		mJ
R_{thJC}				0.17	K/W
R_{thCK}			0.05		K/W

SOT-227B miniBLOC



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.255	31.50	31.88
B	.307	.323	7.80	8.20
C	.161	.169	4.09	4.29
D	.161	.169	4.09	4.29
E	.161	.169	4.09	4.29
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.496	1.505	38.00	38.23
J	.460	.481	11.68	12.22
K	.351	.378	8.92	9.60
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.078	.084	1.98	2.13
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.155	.174	3.94	4.42
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.002	.004	-0.05	0.1

Fig. 1. Output Characteristics @ 25 Deg. C

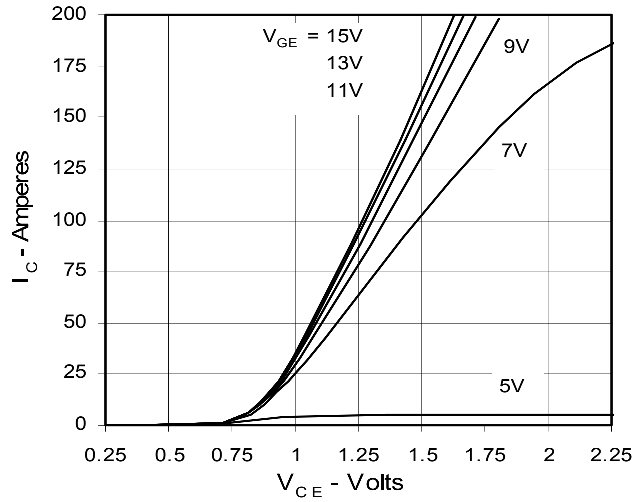


Fig. 2. Extended Output Characteristics @ 25 deg. C

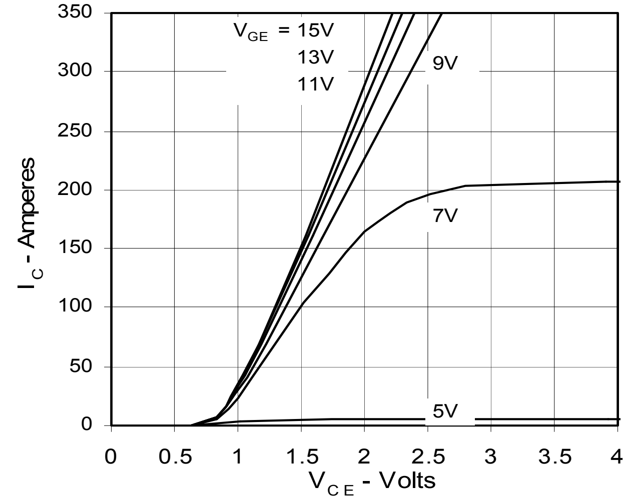


Fig. 3. Output Characteristics @ 125 Deg. C

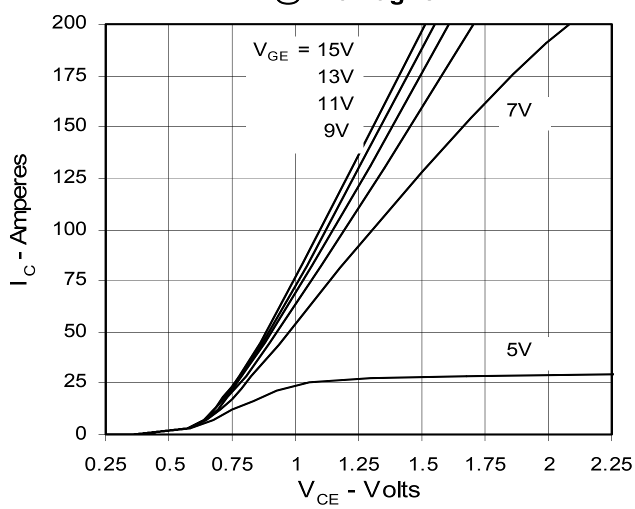


Fig. 4. Dependence of $V_{CE(sat)}$ on Temperature

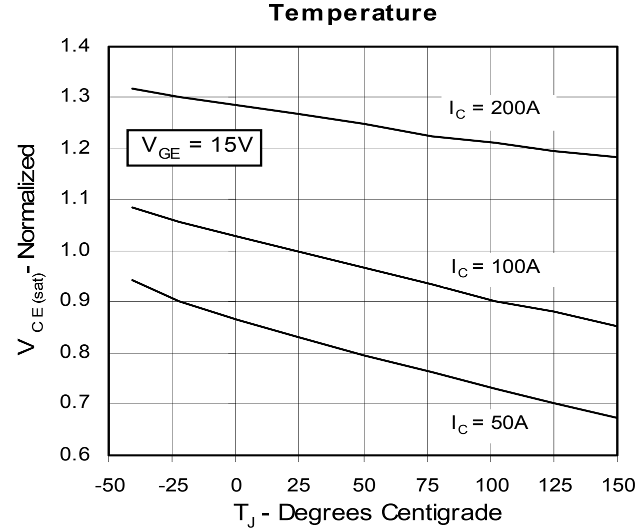


Fig. 5. Collector-to-Emitter Voltage vs. Gate-to-Emiiter Voltage

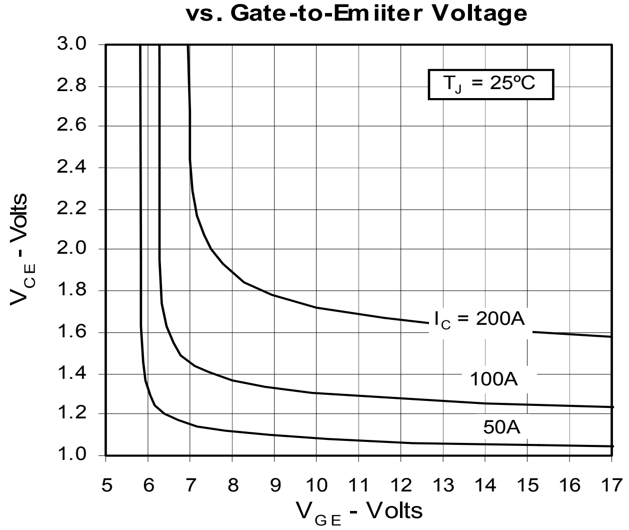


Fig. 6. Input Admittance

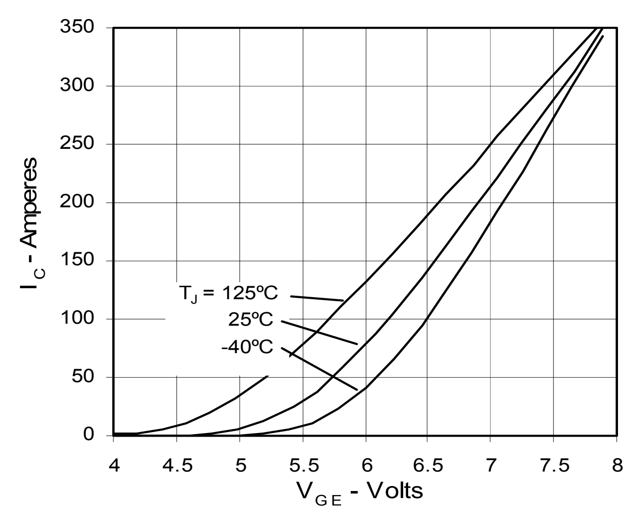


Fig. 7. Transconductance

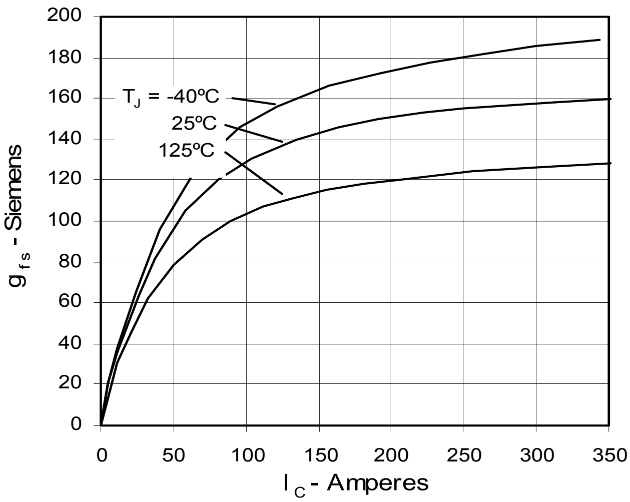


Fig. 8. Dependence of E_{off} on R_G

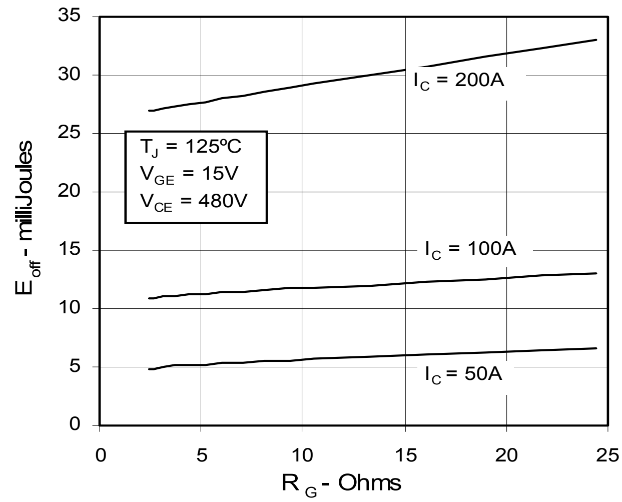


Fig. 9. Dependence of E_{off} on I_c

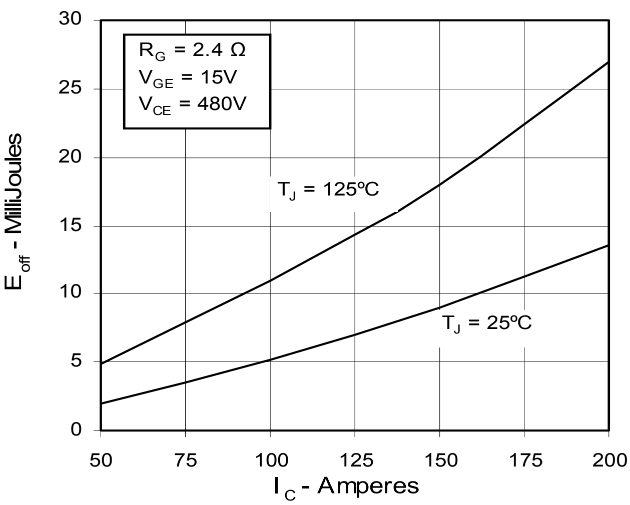


Fig. 10. Dependence of E_{off} on Temperature

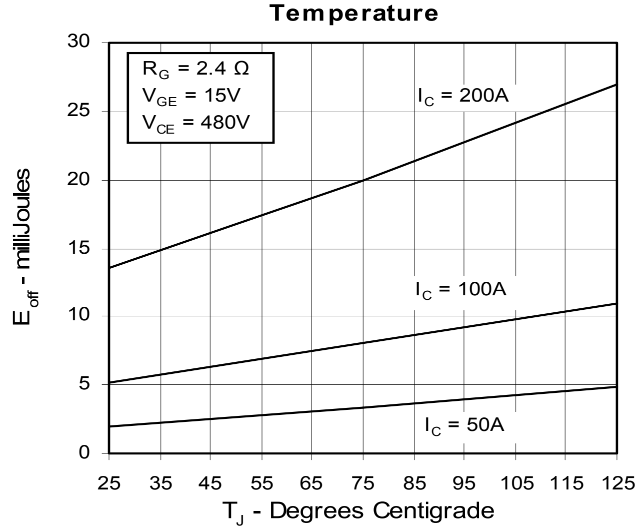


Fig. 11. Gate Charge

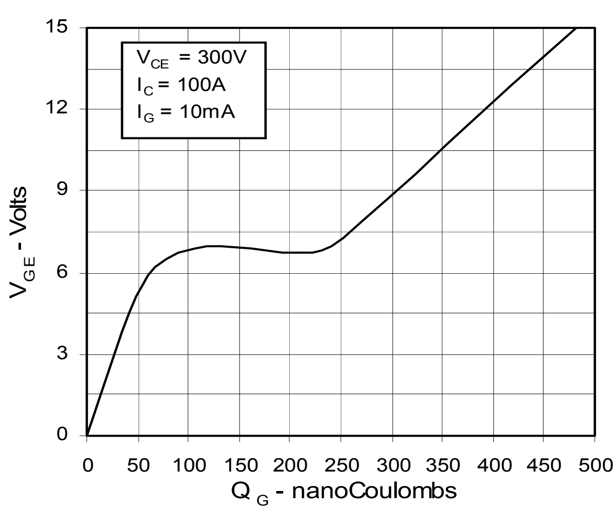
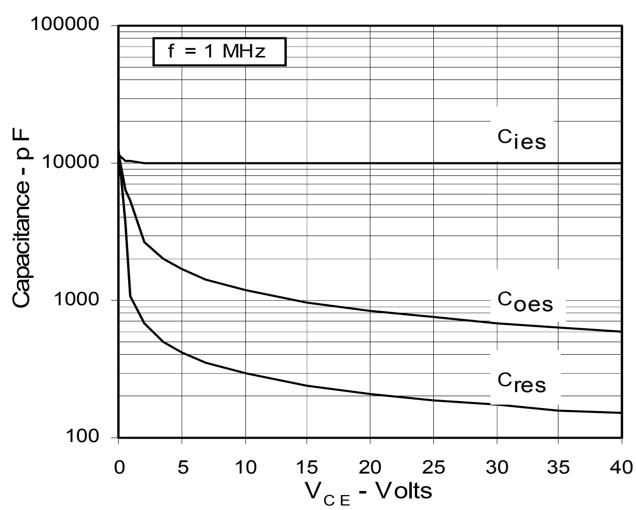


Fig. 12. Capacitance



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

Fig. 13. Maximum Transient Thermal Resistance