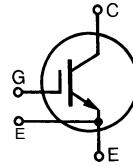


HiPerFAST™ IGBT

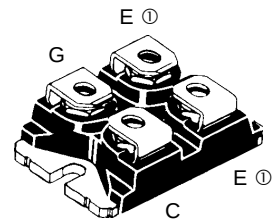
IXGN 200N60
IXGN 200N60A



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

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

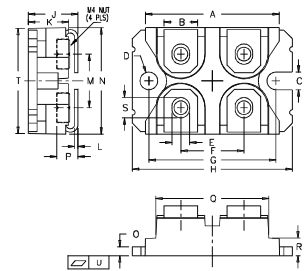
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

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

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

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} C _{oes} C _{res}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		9000	pF	
			600	pF	
			305	pF	
Q _g Q _{ge} Q _{gc}	I _C = I _{C90} , V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		465	nC	
			52	nC	
			228	nC	
t _{d(on)} t _{ri} E _{on} t _{d(off)} t _{fi} E _{off}	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	200N60	100	ns	
			800	1100	ns
			700	950	ns
			350	500	ns
			200	280	ns
			14.4		mJ
			9.6		mJ
t _{d(on)} t _{ri} E _{on} t _{d(off)} t _{fi} E _{off}	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	
				200	ns
				4.8	mJ
				780	ns
				250	ns
				14.4	mJ
R _{thJC} R _{thCK}			0.05	0.21 K/W K/W	

miniBLOC, SOT-227 B


M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	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

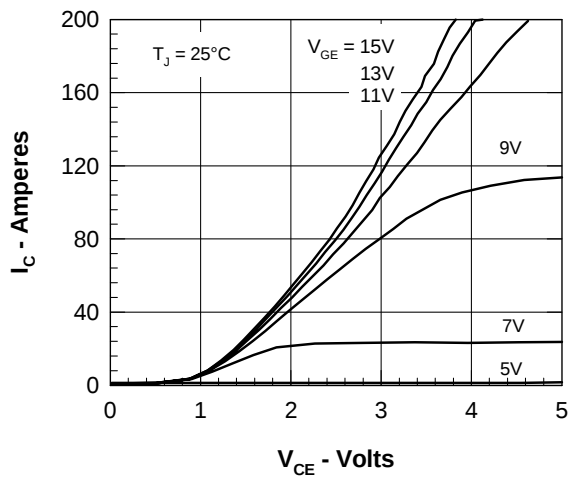


Fig. 1. Saturation Voltage Characteristics

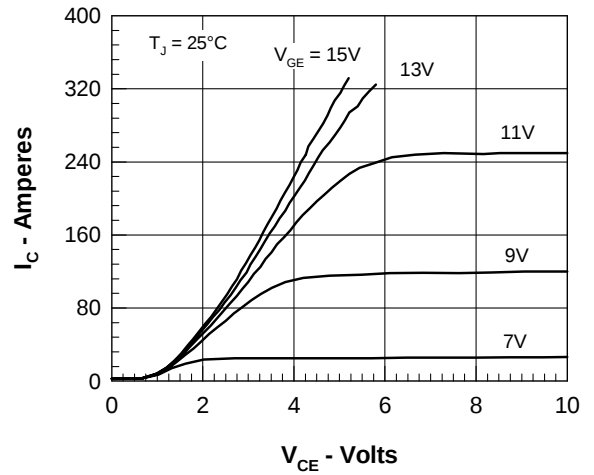


Fig. 2. Extended Output Characteristics

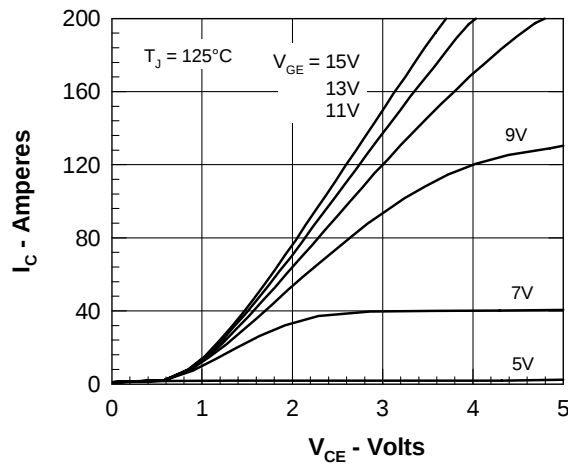


Fig. 3. Saturation Voltage Characteristics

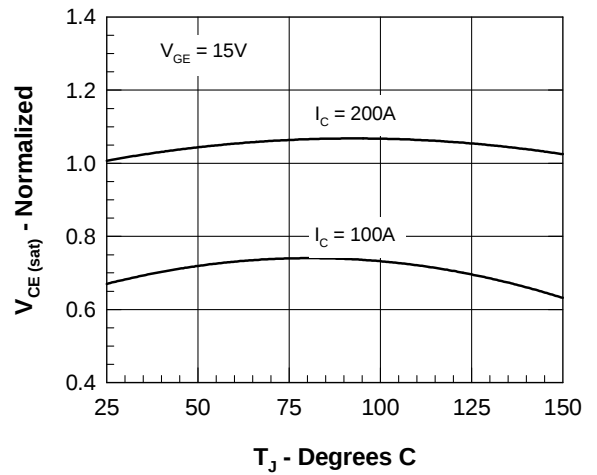
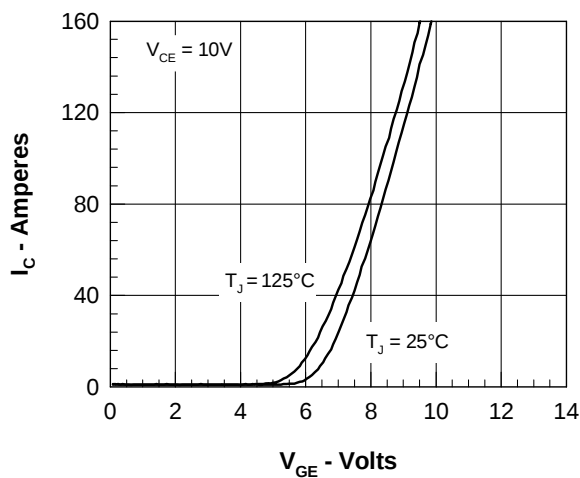
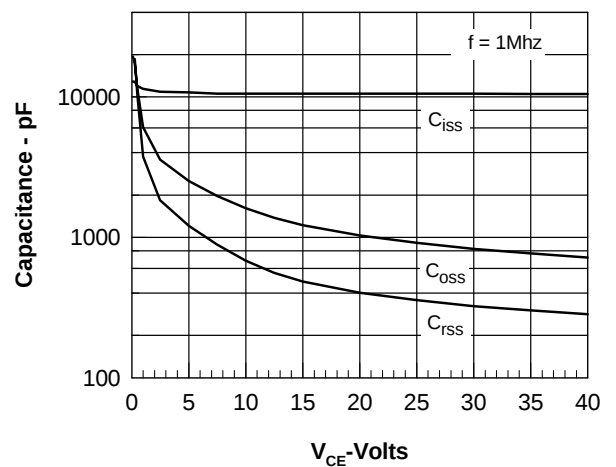

Fig. 4. Temperature Dependence of $V_{CE(sat)}$


Fig. 5. Turn-off Safe Operating Area


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

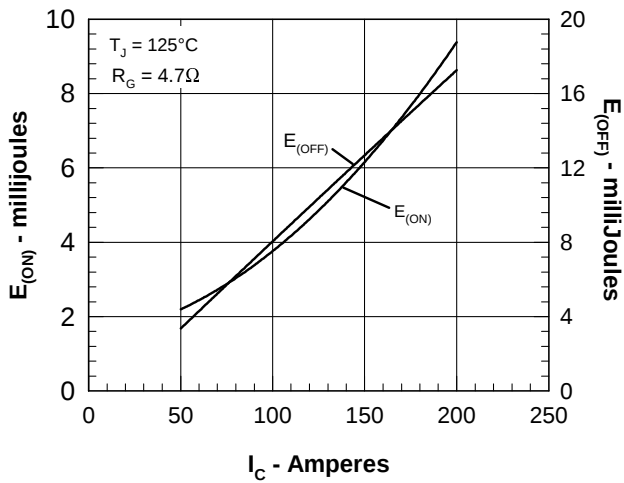
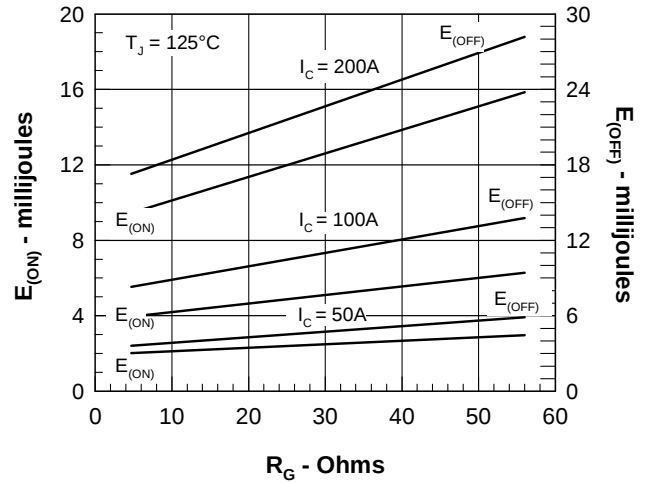
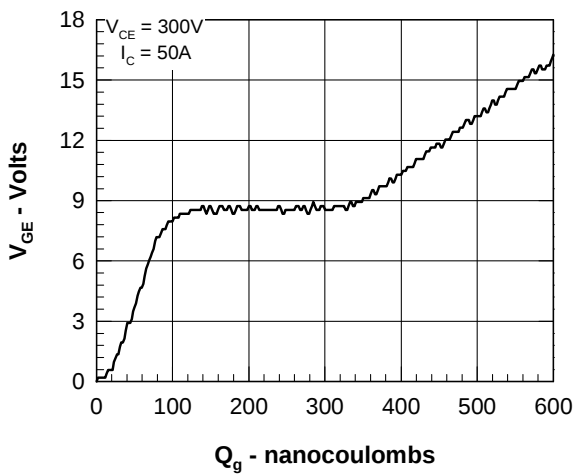

Fig. 7. Dependence of t_{fi} and E_{OFF} on I_C .

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


Fig. 9. Gate Charge

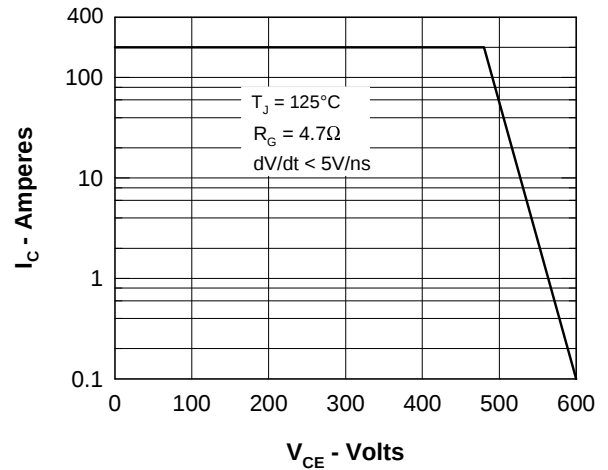


Fig. 10. Junction Capacitance Curves

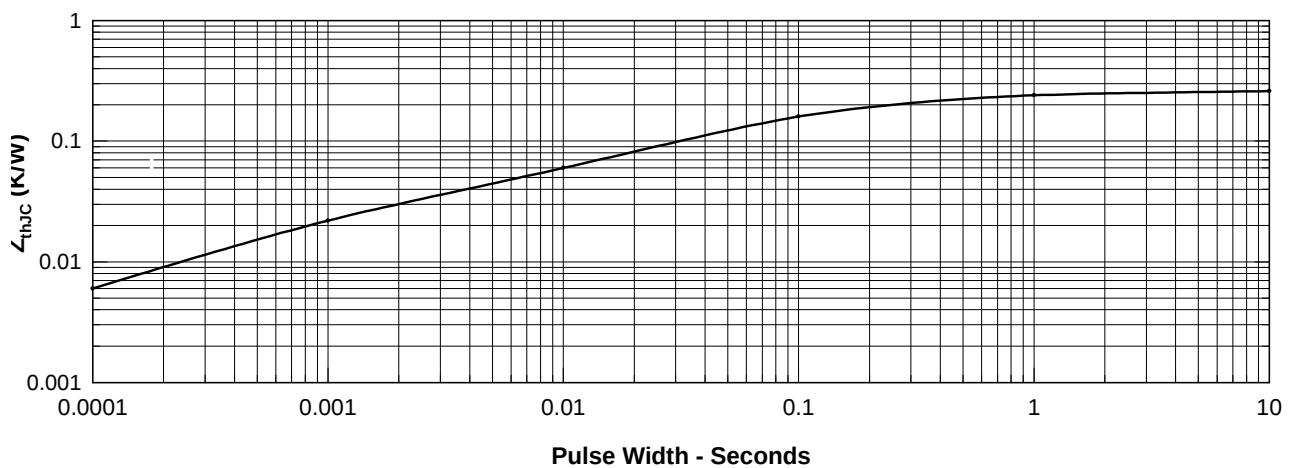


Fig. 11. Transient Thermal Resistance