

# High Voltage IGBT

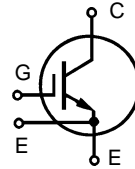
## IXDN 75N120

$$V_{CES} = 1200 \text{ V}$$

$$I_{C25} = 150 \text{ A}$$

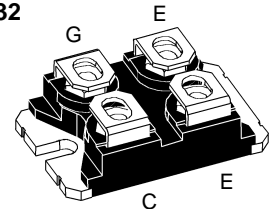
$$V_{CE(sat) \text{ typ}} = 2.2 \text{ V}$$

Short Circuit SOA Capability  
Square RBSOA



miniBLOC, SOT-227 B

E153432



E = Emitter ①, C = Collector  
G = Gate, E = Emitter ①

① Either Emitter terminal can be used as Main or Kelvin Emitter

Symbol	Conditions	Maximum Ratings	
$V_{CES}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	1200	V
$V_{CGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GE} = 20 \text{ k}\Omega$	1200	V
$V_{GES}$	Continuous	$\pm 20$	V
$V_{GEM}$	Transient	$\pm 30$	V
$I_{C25}$	$T_C = 25^\circ\text{C}$	150	A
$I_{C90}$	$T_C = 90^\circ\text{C}$	95	A
$I_{CM}$	$T_C = 90^\circ\text{C}$ , $t_p = 1 \text{ ms}$	190	A
<b>RBSOA</b>	$V_{GE} = \pm 15 \text{ V}$ , $T_J = 125^\circ\text{C}$ , $R_G = 15 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 150$ $V_{CEK} < V_{CES}$	A
<b><math>t_{SC}</math> (SCSOA)</b>	$V_{GE} = \pm 15 \text{ V}$ , $V_{CE} = V_{CES}$ , $T_J = 125^\circ\text{C}$ $R_G = 15 \Omega$ , non repetitive	10	$\mu\text{s}$
$P_C$	$T_C = 25^\circ\text{C}$ IGBT	660	W
$V_{ISOL}$	50/60 Hz; $I_{ISOL} \leq 1 \text{ mA}$	2500	V~
$T_J$		-40 ... +150	$^\circ\text{C}$
$T_{stg}$		-40 ... +150	$^\circ\text{C}$
$M_d$	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
<b>Weight</b>		30	g

### Features

- NPT IGBT technology
- low saturation voltage
- low switching losses
- square RBSOA, no latch up
- high short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- International standard package miniBLOC

### Advantages

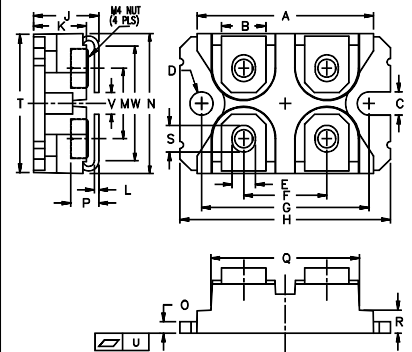
- Space savings
- Easy to mount with 2 screws
- High power density

### Typical Applications

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

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{(BR)CES}$	$V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 3 \text{ mA}$ , $V_{CE} = V_{GE}$	4.5		6.5 V
$I_{CES}$	$V_{CE} = V_{CES}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		6	4 mA mA
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = 75 \text{ A}$ , $V_{GE} = 15 \text{ V}$	2.2	2.7	V

Symbol	Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
C <sub>ies</sub>	V <sub>CE</sub> = 25 V, V <sub>GE</sub> = 0 V, f = 1 MHz		5500	pF
C <sub>oes</sub>			750	pF
C <sub>res</sub>			330	pF
Q <sub>g</sub>	I <sub>C</sub> = 75 A, V <sub>GE</sub> = 15 V, V <sub>CE</sub> = 0.5 V <sub>CES</sub>		360	nC
t <sub>d(on)</sub>	Inductive load, T <sub>J</sub> = 125°C I <sub>C</sub> = 75 A, V <sub>GE</sub> = ±15 V, V <sub>CE</sub> = 600 V, R <sub>G</sub> = 15 Ω		100	ns
t <sub>r</sub>			50	ns
t <sub>d(off)</sub>			650	ns
t <sub>f</sub>			50	ns
E <sub>on</sub>			12.1	mJ
E <sub>off</sub>		10.5	mJ	
R <sub>thJC</sub>	Package with heatsink compound		0.1	0.19 K/W
R <sub>thCK</sub>				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	37.80	38.20	1.489	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
V	3.30	4.57	0.130	0.180
W	0.780	0.830	0.031	0.033

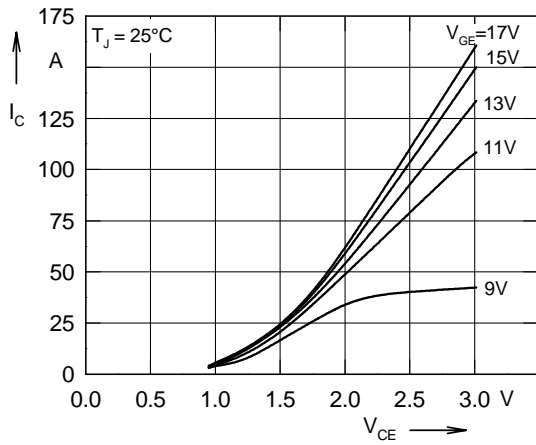


Fig. 1 Typ. output characteristics

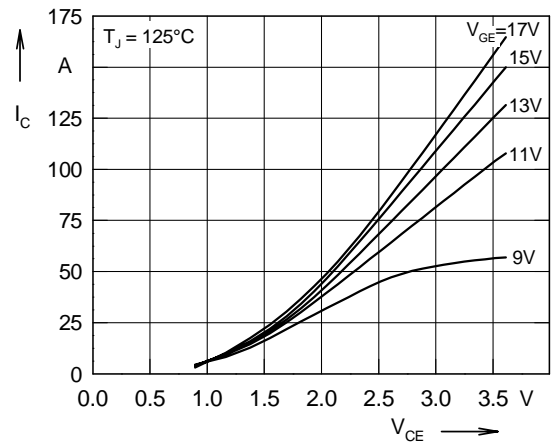


Fig. 2 Typ. output characteristics

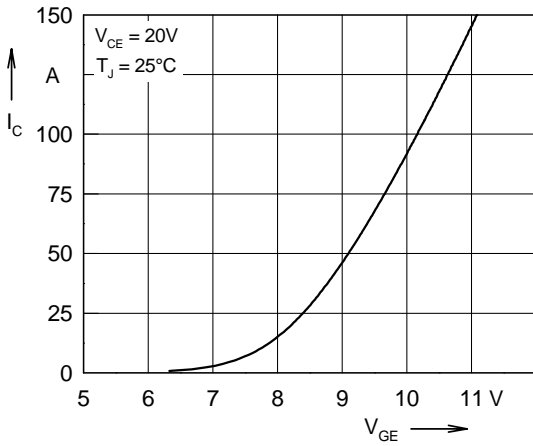


Fig. 3 Typ. transfer characteristics

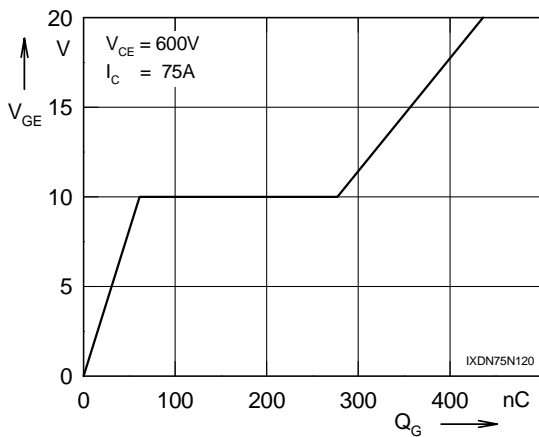


Fig. 4 Typ. turn on gate charge

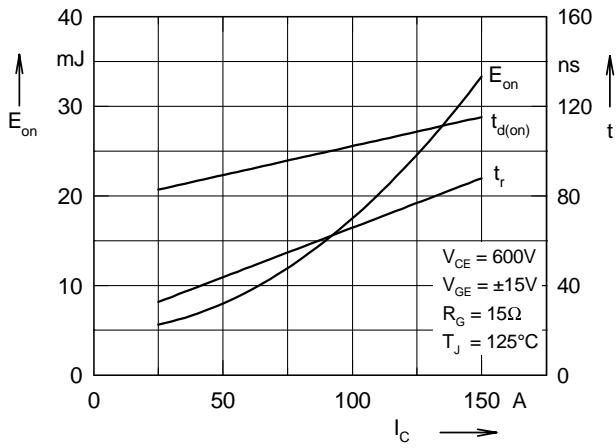


Fig. 5 Typ. turn on energy and switching times versus collector current

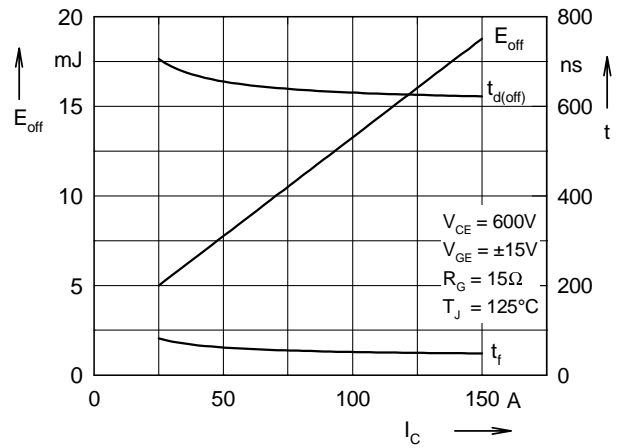


Fig. 6 Typ. turn off energy and switching times versus collector current

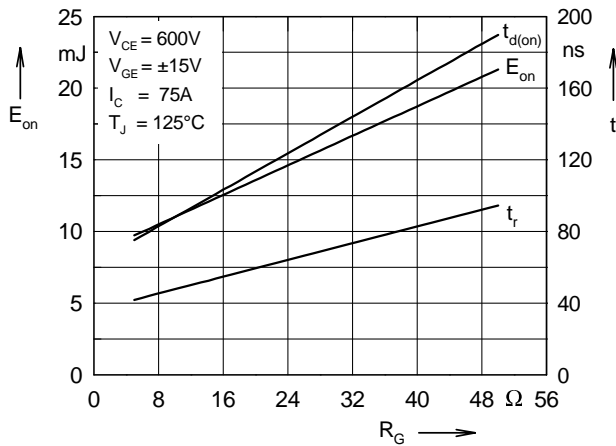


Fig. 7 Typ. turn on energy and switching times versus gate resistor

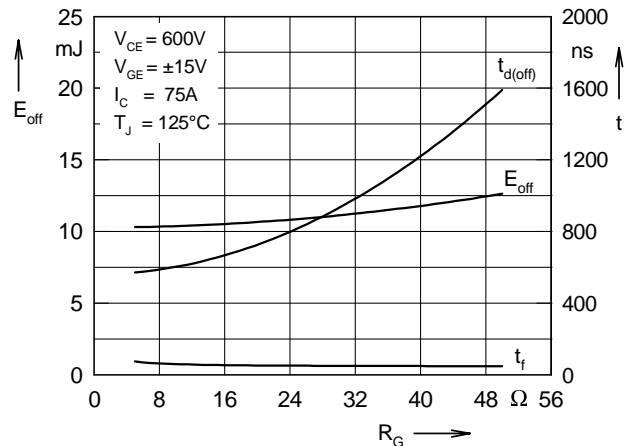


Fig.8 Typ. turn off energy and switching times versus gate resistor

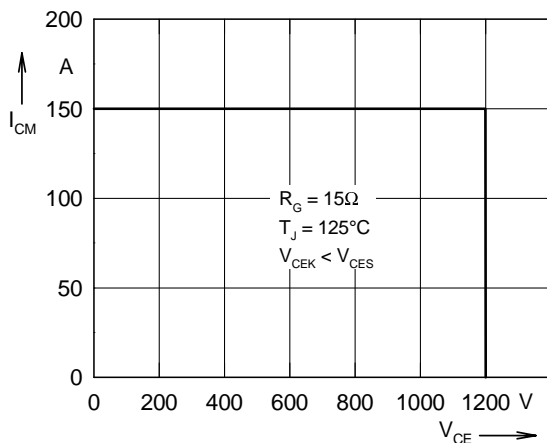


Fig. 9 Reverse biased safe operating area RBSOA

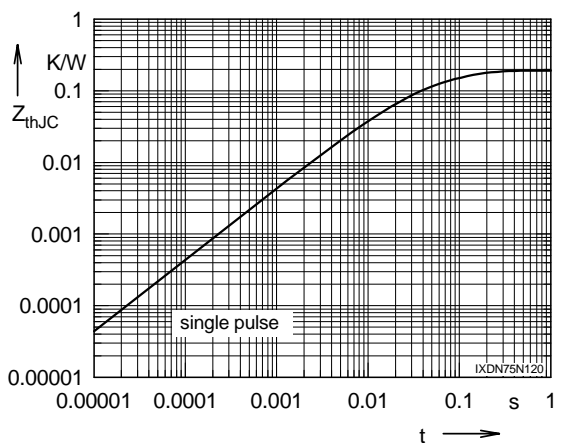


Fig. 10 Typ. transient thermal impedance



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