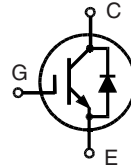


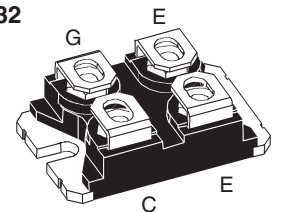
High Voltage IGBT with optional Diode

Short Circuit SOA Capability
Square RBSOA

$$\begin{aligned} V_{CES} &= 1200 \text{ V} \\ I_{C25} &= 100 \text{ A} \\ V_{CE(sat) \text{ typ}} &= 2.3 \text{ V} \end{aligned}$$



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

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
- optional ultra fast diode
- 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	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C}$ to 150°C	1200	V
V_{CGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GE} = 20 \text{ k}\Omega$	1200	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	100	A
I_{C90}	$T_C = 90^\circ\text{C}$	62	A
I_{CM}	$T_C = 90^\circ\text{C}$, $t_p = 1 \text{ ms}$	124	A
RBSOA	$V_{GE} = \pm 15 \text{ V}$, $T_J = 125^\circ\text{C}$, $R_G = 22 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 100$ $V_{CEK} < V_{CES}$	A
t_{SC} (SCSOA)	$V_{GE} = \pm 15 \text{ V}$, $V_{CE} = V_{CES}$, $T_J = 125^\circ\text{C}$ $R_G = 22 \Omega$, non repetitive	10	μs
P_C	$T_C = 25^\circ\text{C}$	IGBT Diode	450 220 W 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 Terminal connection torque (M4)	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
Weight		30	g

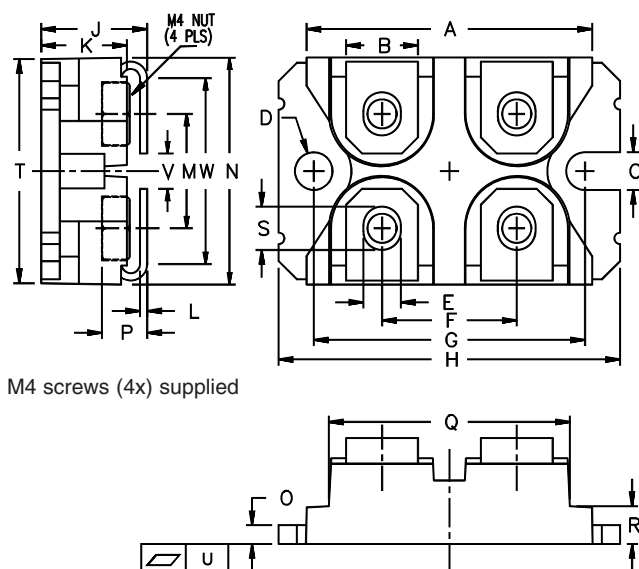
Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{(BR)CES}$	$V_{GE} = 0 \text{ V}$	1200		V
$V_{GE(th)}$	$I_C = 2 \text{ mA}$, $V_{CE} = V_{GE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		6	3.8 mA mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = 55 \text{ A}$, $V_{GE} = 15 \text{ V}$	2.3	2.8	V

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		3300	pF
C_{oes}			500	pF
C_{res}			220	pF
Q_g	$I_C = 50\text{ A}$, $V_{GE} = 15\text{ V}$, $V_{CE} = 0.5 V_{CES}$		240	nC
$t_{d(on)}$	Inductive load, $T_J = 125^\circ\text{C}$ $I_C = 55\text{ A}$, $V_{GE} = \pm 15\text{ V}$, $V_{CE} = 600\text{ V}$, $R_G = 22\ \Omega$		100	ns
t_r			70	ns
$t_{d(off)}$			500	ns
t_f			70	ns
E_{on}			8.4	mJ
E_{off}			6.2	mJ
R_{thJC}	Package with heatsink compound			0.28 K/W
R_{thCK}			0.1	K/W

Reverse Diode (FRED)

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_F	$I_F = 55\text{ A}$, $V_{GE} = 0\text{ V}$		2.4	V
	$I_F = 55\text{ A}$, $V_{GE} = 0\text{ V}$, $T_J = 125^\circ\text{C}$		1.9	V
I_F	$T_C = 25^\circ\text{C}$			110 A
	$T_C = 90^\circ\text{C}$			60 A
I_{RM}	$I_F = 55\text{ A}$, $-di_F/dt = 400\text{ A}/\mu\text{s}$, $V_R = 600\text{ V}$		40	A
t_{rr}	$V_{GE} = 0\text{ V}$, $T_J = 125^\circ\text{C}$		200	ns
t_{rr}	$I_F = 1\text{ A}$, $-di_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $V_{GE} = 0\text{ V}$		40	ns
R_{thJC}				0.6 K/W

miniBLOC, SOT-227 B



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

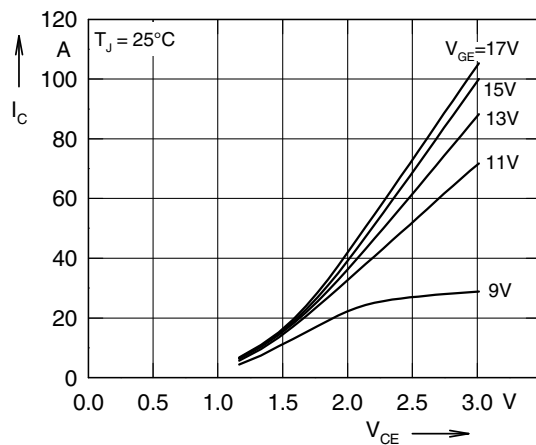


Fig. 1 Typ. output characteristics

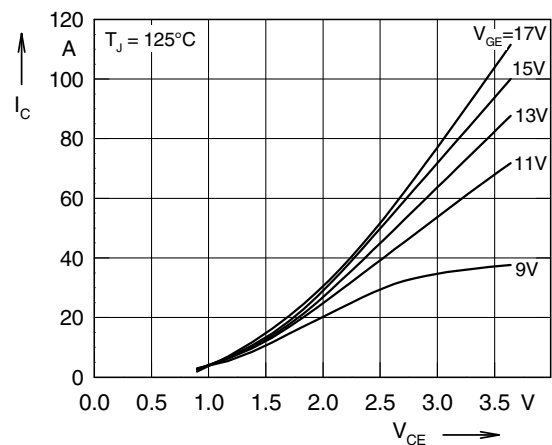


Fig. 2 Typ. output characteristics

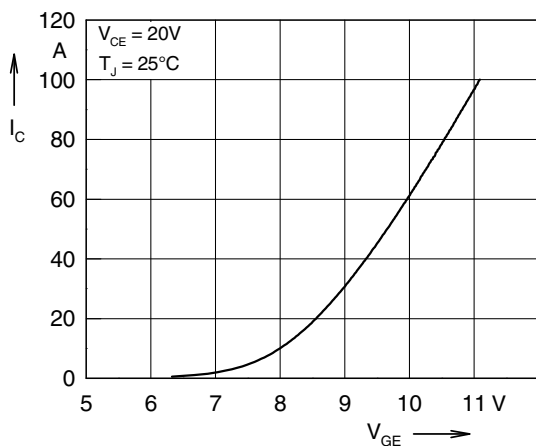


Fig. 3 Typ. transfer characteristics

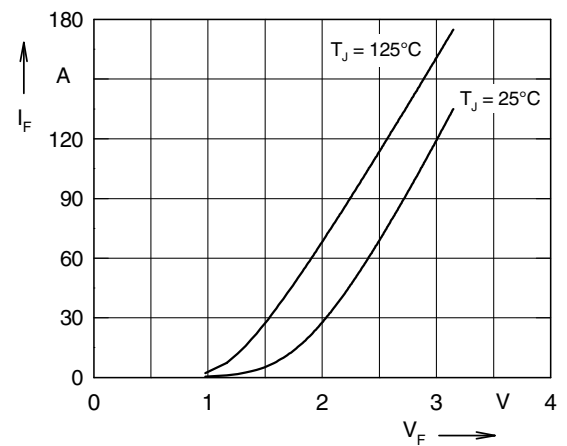


Fig. 4 Typ. forward characteristics of free wheeling diode

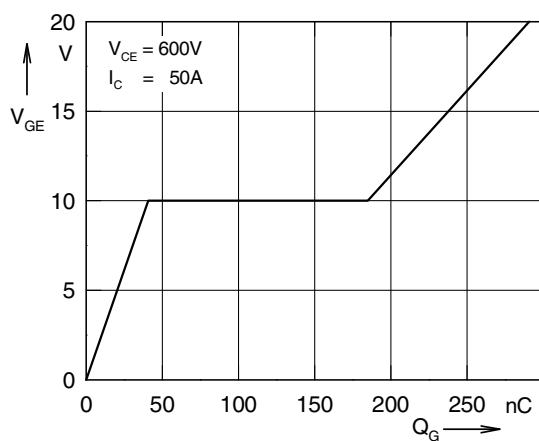


Fig. 5 Typ. turn on gate charge

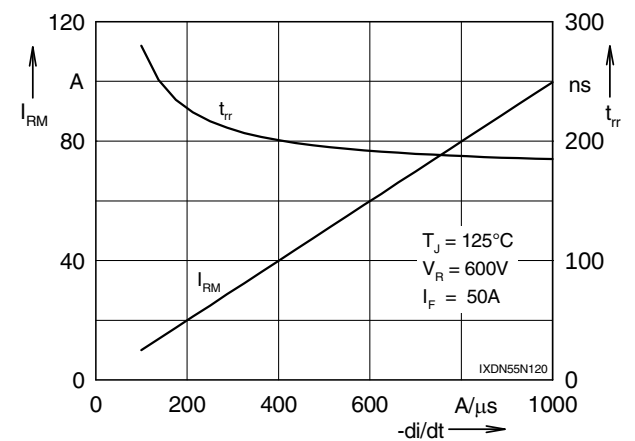
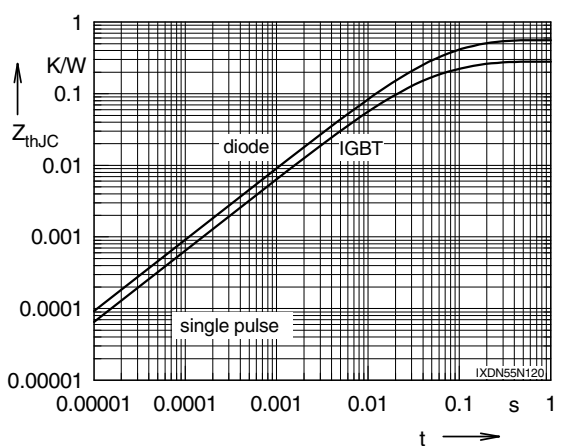
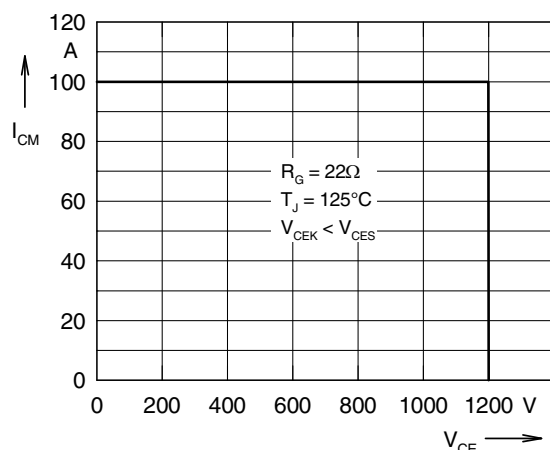
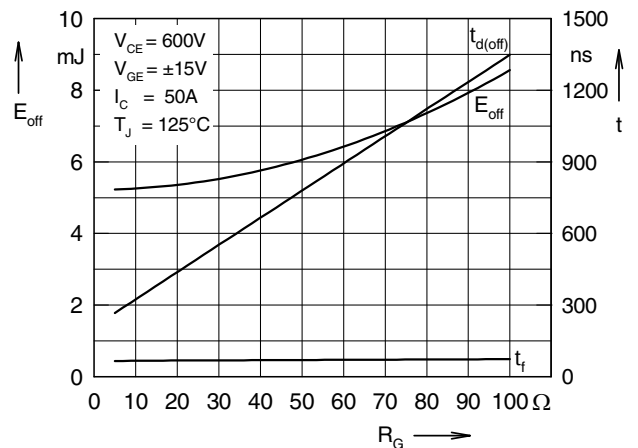
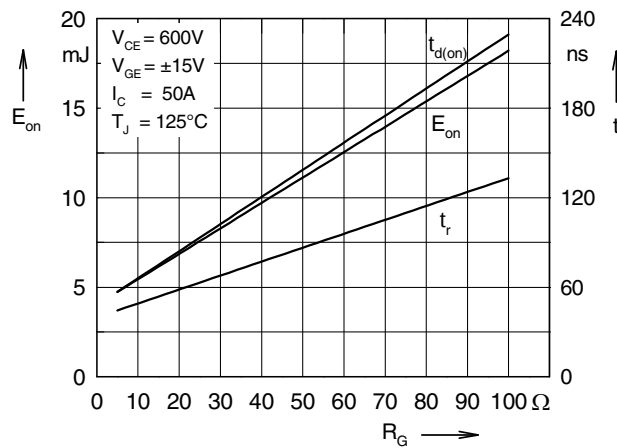
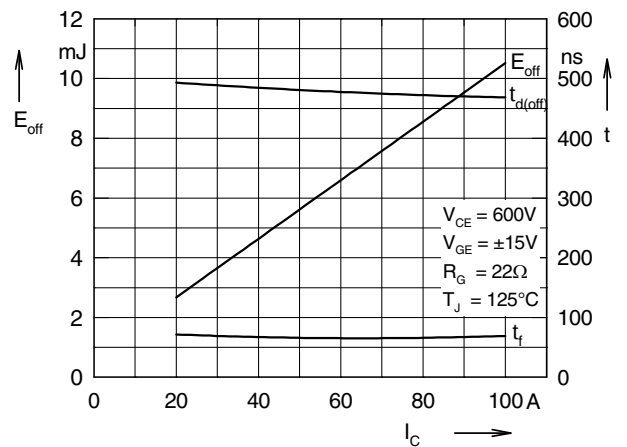
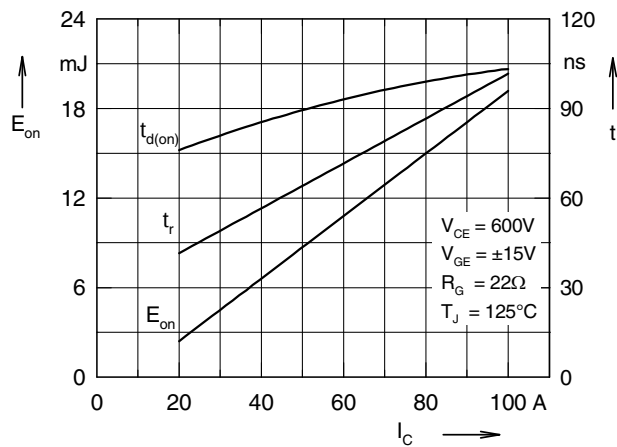


Fig. 6 Typ. turn off characteristics of free wheeling diode





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