

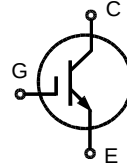
High Voltage IGBT

IXDA 20N120 AS

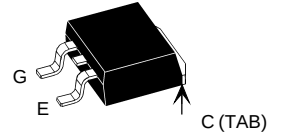
$$\begin{aligned} V_{CES} &= 1200 \text{ V} \\ I_{C25} &= 34 \text{ A} \\ V_{CE(sat) \text{ typ}} &= 2.8 \text{ V} \end{aligned}$$

Short Circuit SOA Capability
Square RBSOA

Preliminary Data



TO-263 AB



E = Emitter, G = Gate, C (TAB) = Collector

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}	$T_C = 25^\circ\text{C}$	34	A
I_{C90}	$T_C = 90^\circ\text{C}$	21	A
I_{CM}	$T_C = 90^\circ\text{C}$, $t_p = 1 \text{ ms}$	42	A
RBSOA	$V_{GE} = \pm 15 \text{ V}$, $T_J = 125^\circ\text{C}$, $R_G = 68 \Omega$ Clamped inductive load, $L = 30 \mu\text{H}$	$I_{CM} = 35$ $V_{CEK} < V_{CES}$	A
t_{SC} (SCSOA)	$V_{GE} = \pm 15 \text{ V}$, $V_{CE} = V_{CES}$, $T_J = 125^\circ\text{C}$ $R_G = 68 \Omega$, non repetitive	10	μs
P_C	$T_C = 25^\circ\text{C}$ IGBT	200	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
Weight		2	g

Features

- NPT IGBT technology
- high switching speed
- low tail current
- no latch up
- short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- International standard package

Advantages

- Space savings
- High power density

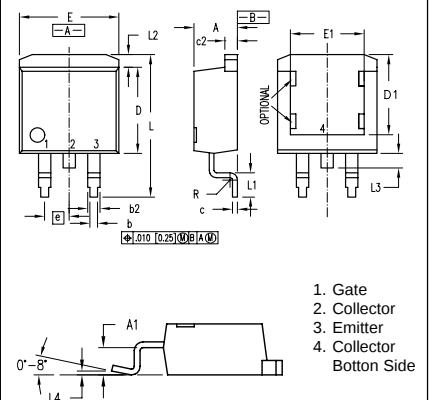
Typical Applications

- 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
$V_{GE(th)}$	$I_C = 0.6 \text{ mA}$, $V_{CE} = V_{GE}$	4.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		0.8	0.8 mA mA
I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$			$\pm 500 \text{ nA}$
$V_{CE(sat)}$	$I_C = 20 \text{ A}$, $V_{GE} = 15 \text{ V}$		2.8	3.4 V

Symbol	Conditions	Characteristic Values ($T_j = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
C_{ies}	$V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$		1000	pF
C_{oes}			150	pF
C_{res}			70	pF
Q_g	$I_C = 20\text{ A}, V_{GE} = 15\text{ V}, V_{CE} = 0.5\text{ V}_{CES}$		70	nC
$t_{d(on)}$	Inductive load, $T_j = 125^\circ\text{C}$ $I_C = 20\text{ A}, V_{GE} = \pm 15\text{ V},$ $V_{CE} = 600\text{ V}, R_G = 68\ \Omega$		60	ns
t_r			60	ns
$t_{d(off)}$			400	ns
t_f			50	ns
E_{on}			3.5	mJ
E_{off}			2.1	mJ
R_{thJC}				0.63 K/W

TO-263 AB



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	8.00	8.89	.315	.350
E	9.65	10.29	.380	.405
E1	6.22	8.13	.245	.320
e	2.54 BSC		.100 BSC	
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.20	0	.008
R	0.46	0.74	.018	.029

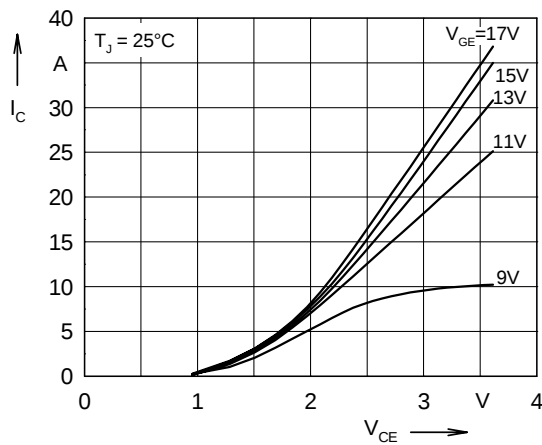


Fig. 1 Typ. output characteristics

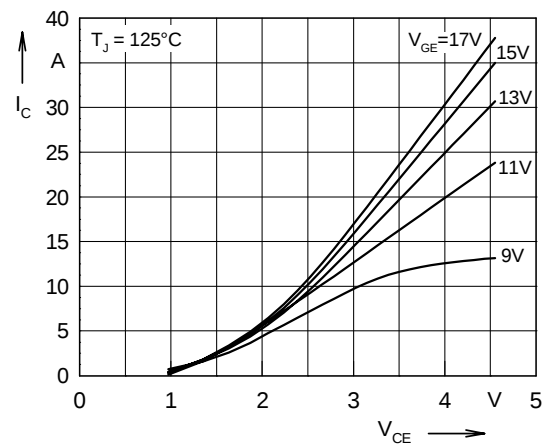


Fig. 2 Typ. output characteristics

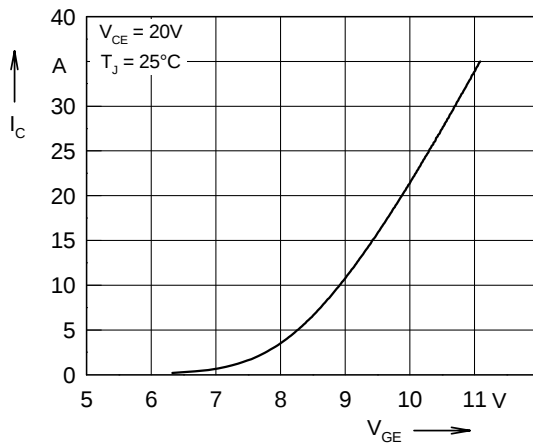


Fig. 3 Typ. transfer characteristics

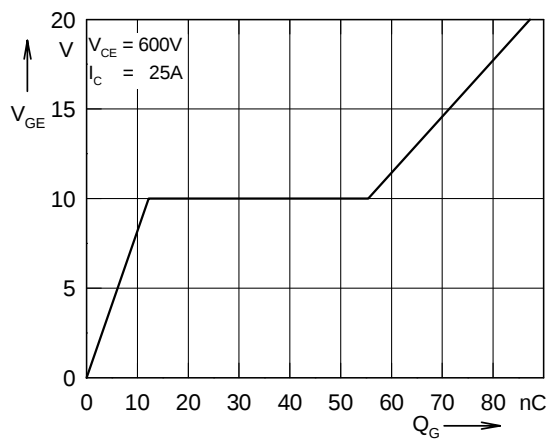


Fig. 4 Typ. turn on gate charge

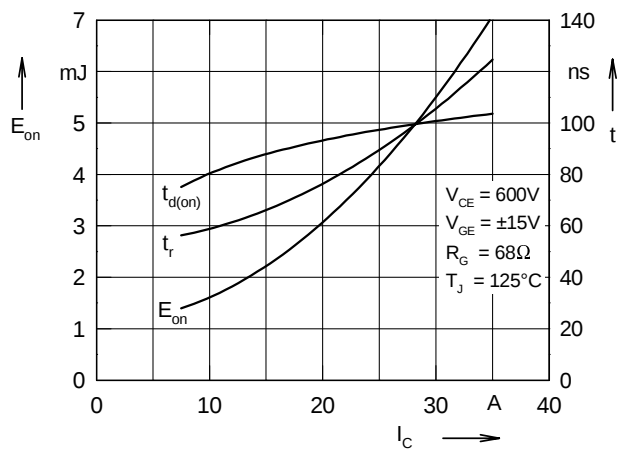


Fig. 5 Typ. turn on energy and switching times versus collector current

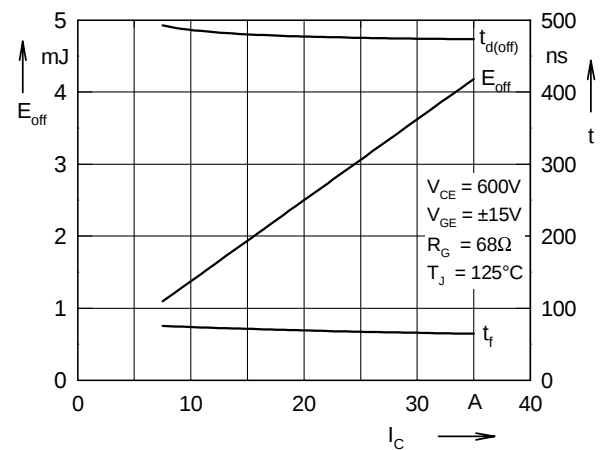


Fig. 6 Typ. turn off energy and switching times versus collector current

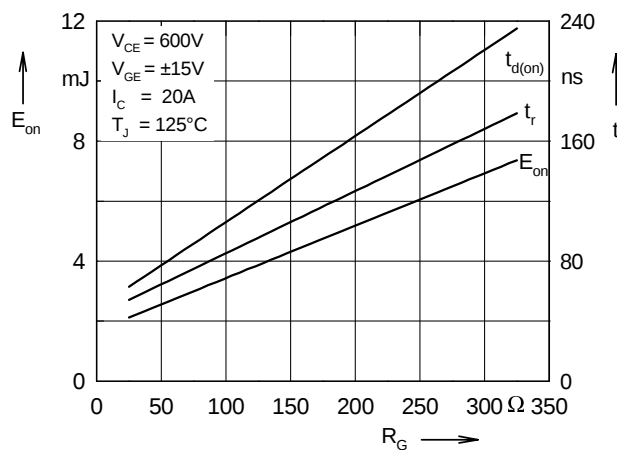


Fig. 7 Typ. turn on energy and switching times versus gate resistor

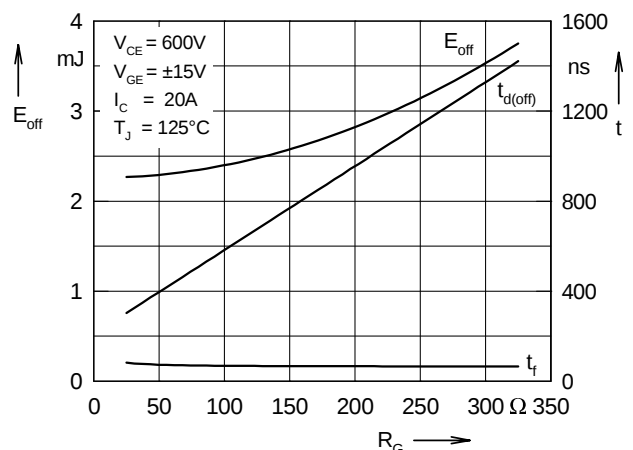


Fig. 8 Typ. turn off energy and switching times versus gate resistor

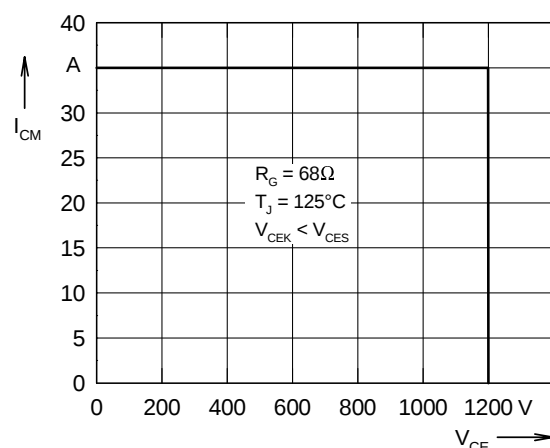


Fig. 9 Reverse biased safe operating area RBSOA

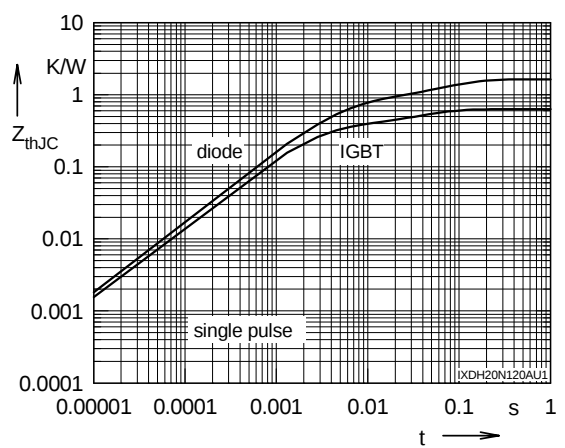


Fig. 10 Typ. transient thermal impedance