

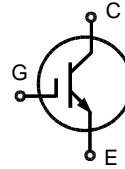
High Voltage IGBT

IXDA 20N120 AS

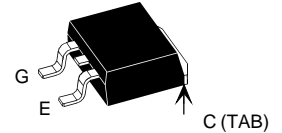
$V_{CES} = 1200\text{ V}$
 $I_{C25} = 34\text{ A}$
 $V_{CE(sat) typ} = 2.8\text{ V}$

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

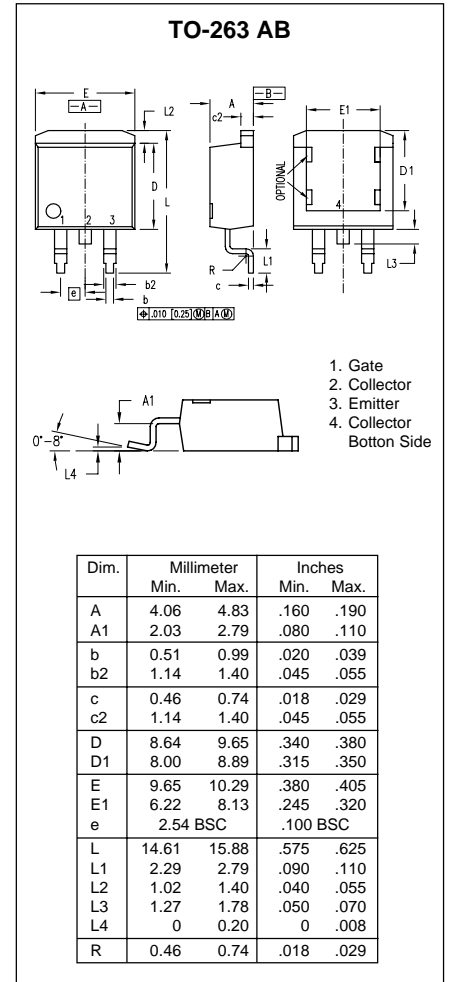
- Space savings
- High power density

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°C, unless otherwise specified)		
		min.	typ.	max.
C _{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		1000	pF
C _{oes}			150	pF
C _{res}			70	pF
Q _g	I _C = 20 A, V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		70	nC
t _{d(on)}	Inductive load, T_J = 125°C I _C = 20 A, V _{GE} = ±15 V, V _{CE} = 600 V, R _G = 68 Ω		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



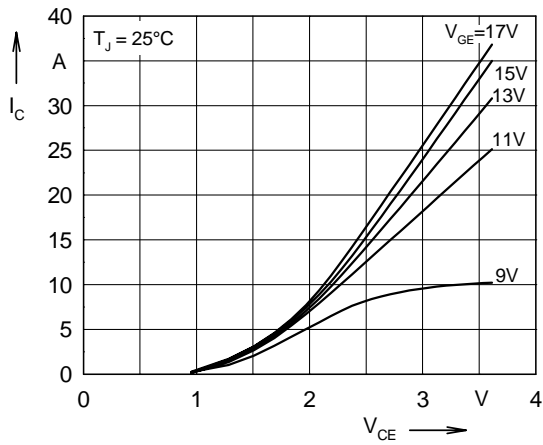


Fig. 1 Typ. output characteristics

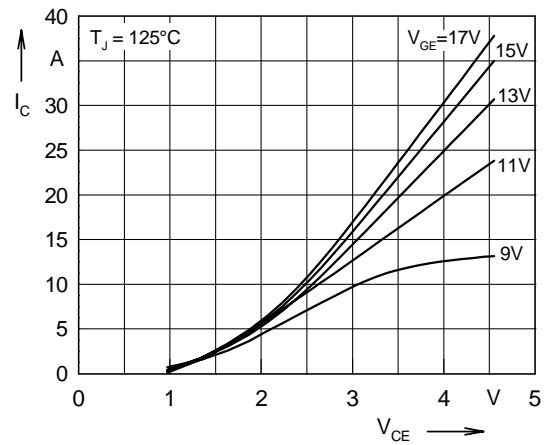


Fig. 2 Typ. output characteristics

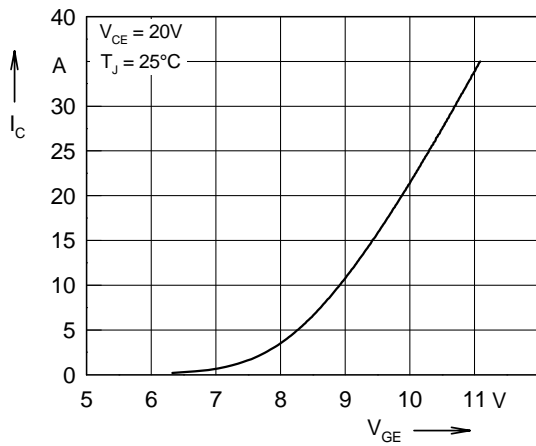


Fig. 3 Typ. transfer characteristics

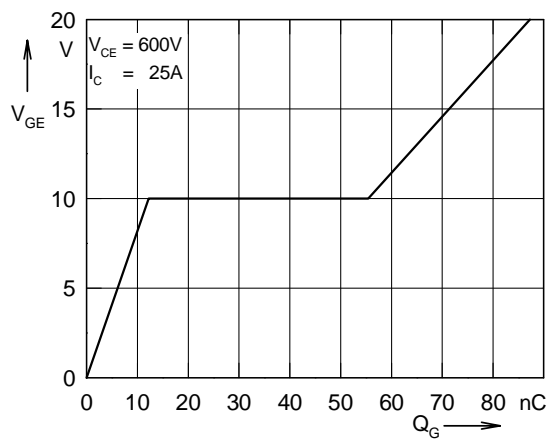


Fig. 4 Typ. turn on gate charge

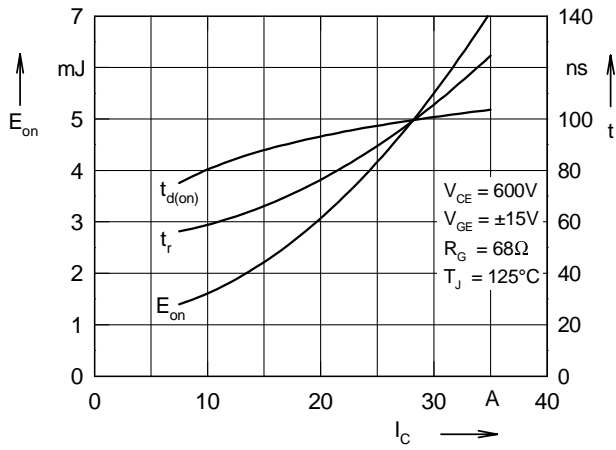


Fig. 5 Typ. turn on energy and switching times versus collector current

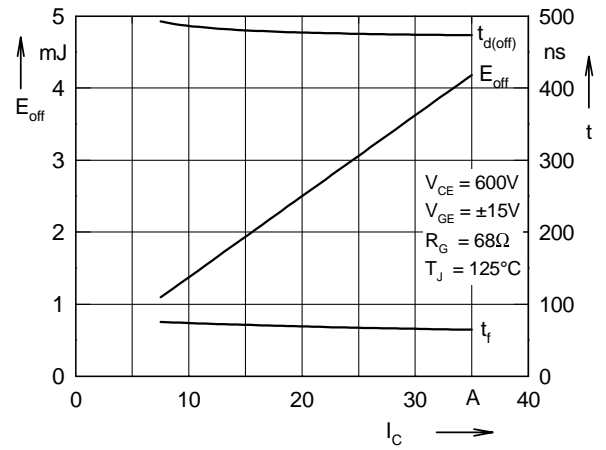


Fig. 6 Typ. turn off energy and switching times versus collector current

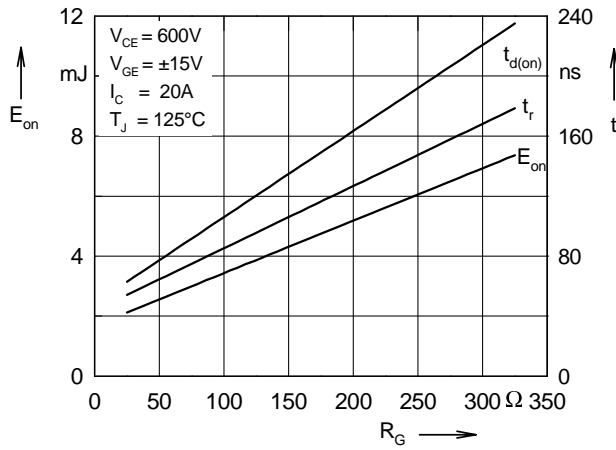


Fig. 7 Typ. turn on energy and switching times versus gate resistor

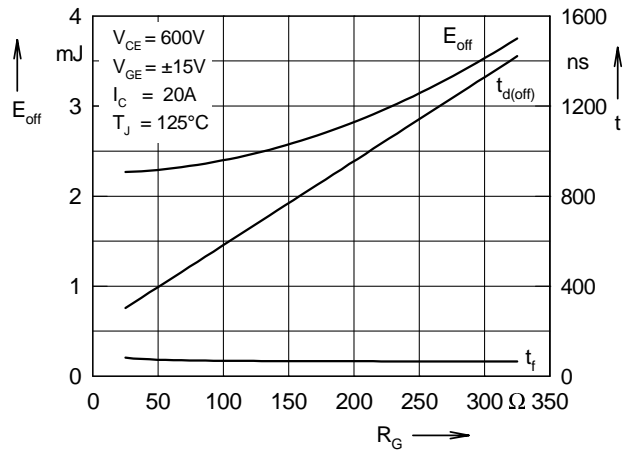


Fig. 8 Typ. turn off energy and switching times versus gate resistor

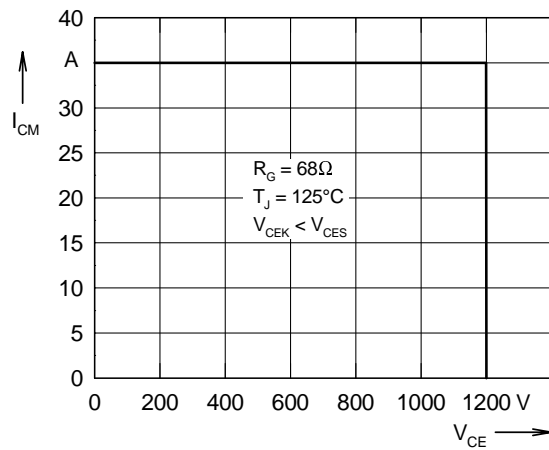


Fig. 9 Reverse biased safe operating area RBSOA

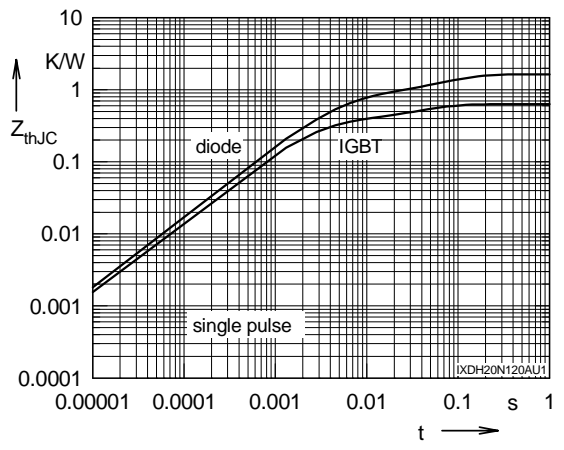


Fig. 10 Typ. transient thermal impedance