

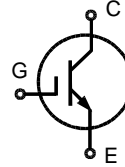
High Voltage IGBT

IXDA 20N120 AS

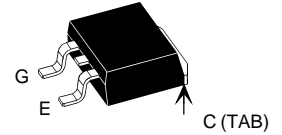
$V_{CES} = 1200\text{ V}$
 $I_{C25} = 34\text{ A}$
 $V_{CE(sat) typ} = 2.8\text{ V}$

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

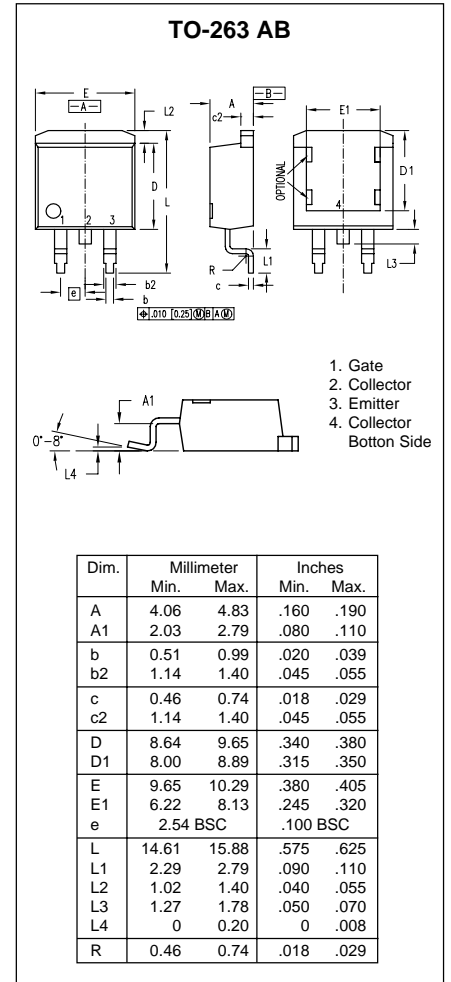
- Space savings
- High power density

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 | | 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 |



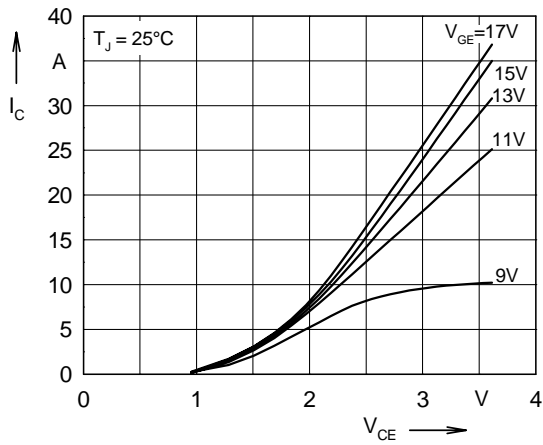


Fig. 1 Typ. output characteristics

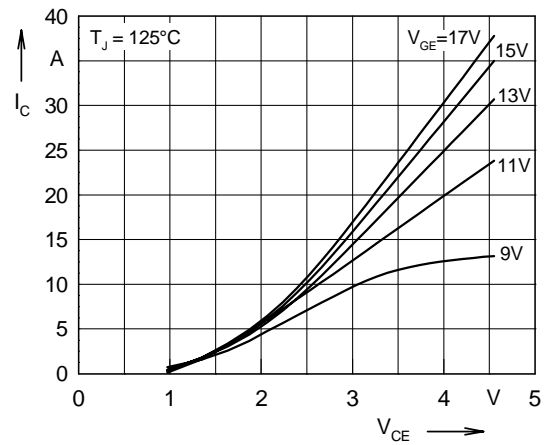


Fig. 2 Typ. output characteristics

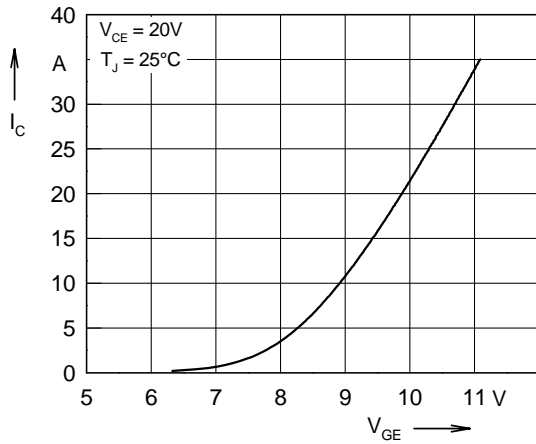


Fig. 3 Typ. transfer characteristics

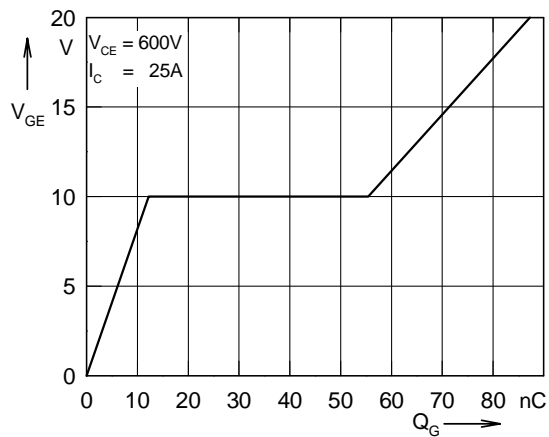


Fig. 4 Typ. turn on gate charge

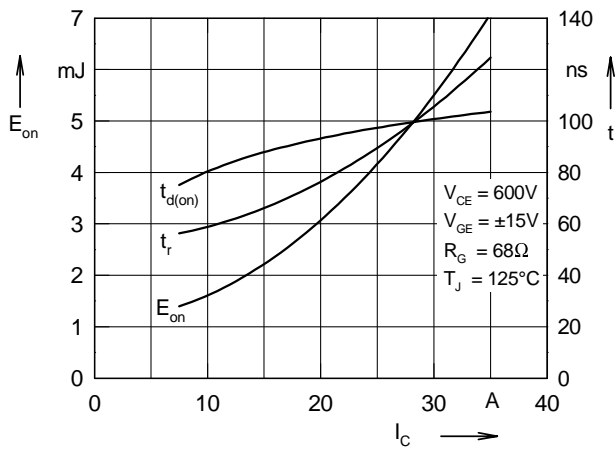


Fig. 5 Typ. turn on energy and switching times versus collector current

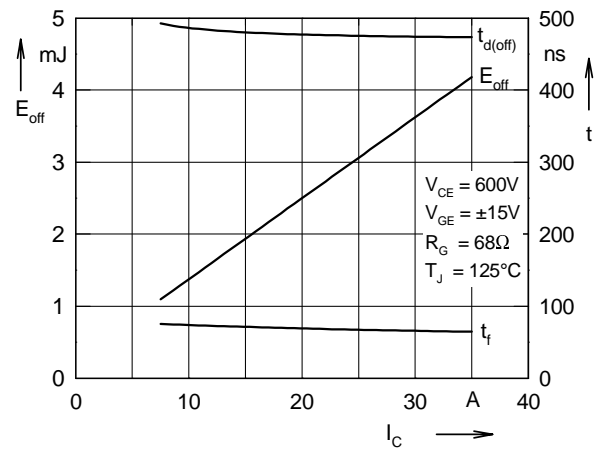


Fig. 6 Typ. turn off energy and switching times versus collector current

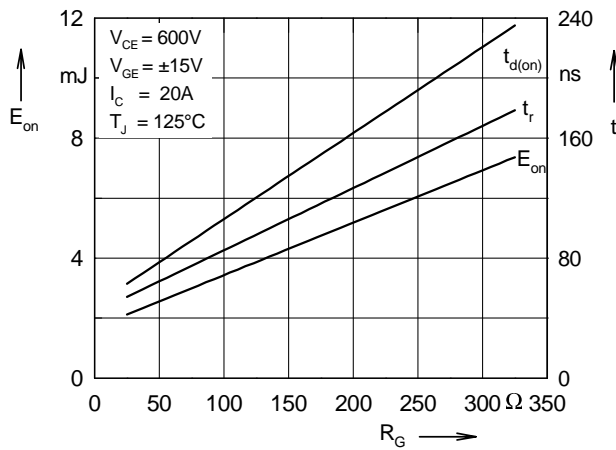


Fig. 7 Typ. turn on energy and switching times versus gate resistor

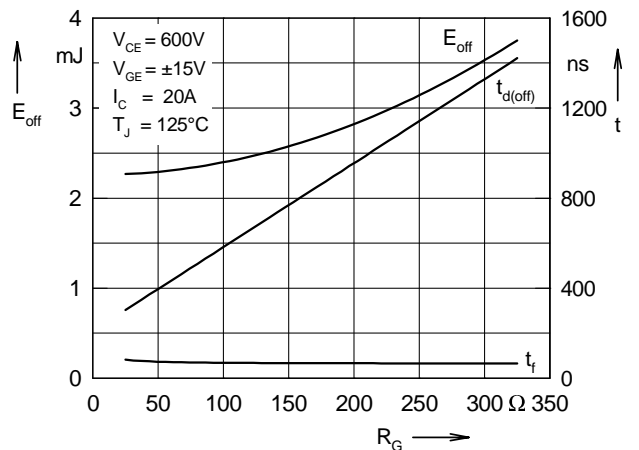


Fig. 8 Typ. turn off energy and switching times versus gate resistor

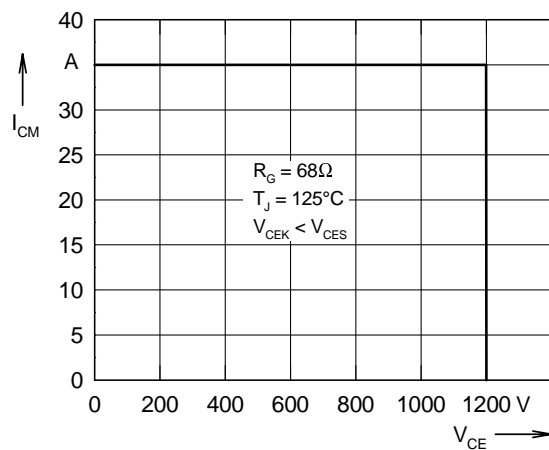


Fig. 9 Reverse biased safe operating area RBSOA

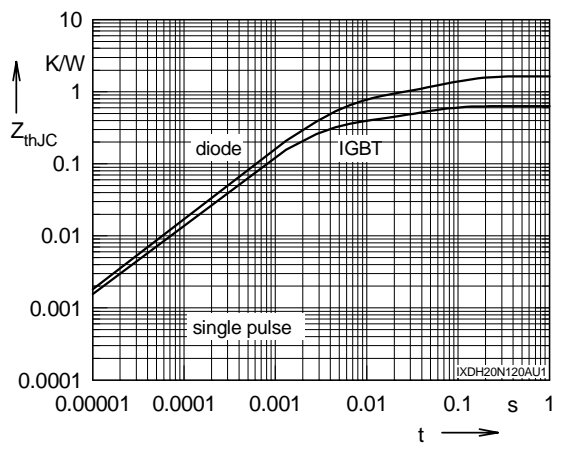


Fig. 10 Typ. transient thermal impedance