

**Electrical Characteristics**, at  $T_j = 25\text{ °C}$ , unless otherwise specified

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**Switching Characteristics, Inductive Load at  $T_j = 125\text{ °C}$** 

|   |              |   |      |      |    |
|---|--------------|---|------|------|----|
| Turn-on delay time<br>$V_{CC} = 1200\text{ V}$ , $V_{GE} = 15\text{ V}$ , $I_C = 150\text{ A}$<br>$R_{Gon} = 10\ \Omega$    | $t_{d(on)}$  | - | 520  | 1000 | ns |
| Rise time<br>$V_{CC} = 1200\text{ V}$ , $V_{GE} = 15\text{ V}$ , $I_C = 150\text{ A}$<br>$R_{Gon} = 10\ \Omega$             | $t_r$        | - | 200  | 400  |    |
| Turn-off delay time<br>$V_{CC} = 1200\text{ V}$ , $V_{GE} = -15\text{ V}$ , $I_C = 150\text{ A}$<br>$R_{Goff} = 10\ \Omega$ | $t_{d(off)}$ | - | 1200 | 1800 |    |
| Fall time<br>$V_{CC} = 1200\text{ V}$ , $V_{GE} = -15\text{ V}$ , $I_C = 150\text{ A}$<br>$R_{Goff} = 10\ \Omega$           | $t_f$        | - | 110  | 160  |    |

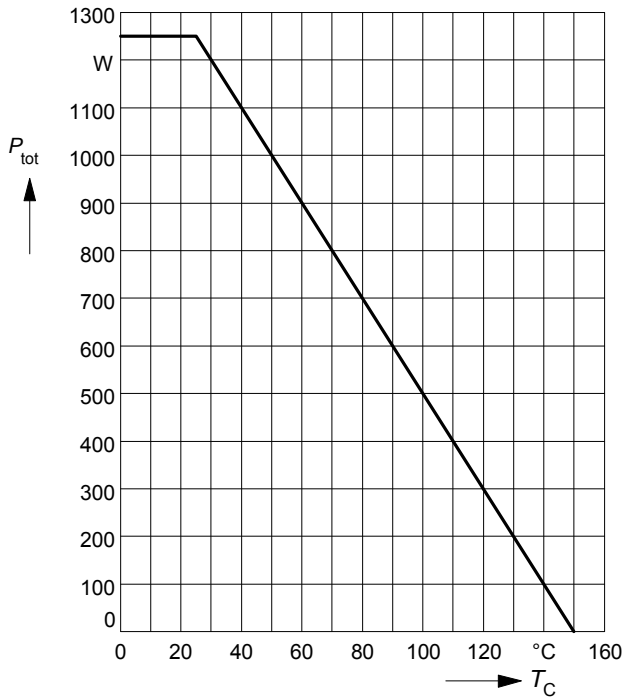
**Free-Wheel Diode**

|   |          |   |     |     |               |
|---|----------|---|-----|-----|---------------|
| Diode forward voltage<br>$I_F = 150\text{ A}$ , $V_{GE} = 0\text{ V}$ , $T_j = 25\text{ °C}$<br>$I_F = 150\text{ A}$ , $V_{GE} = 0\text{ V}$ , $T_j = 125\text{ °C}$                        | $V_F$    | - | 2.3 | 2.8 | V             |
| Reverse recovery time<br>$I_F = 150\text{ A}$ , $V_R = -1200\text{ V}$ , $V_{GE} = 0\text{ V}$<br>$di_F/dt = -1200\text{ A}/\mu\text{s}$ , $T_j = 125\text{ °C}$                            | $t_{rr}$ | - | 0.6 | -   |               |
| Reverse recovery charge<br>$I_F = 150\text{ A}$ , $V_R = -1200\text{ V}$ , $V_{GE} = 0\text{ V}$<br>$di_F/dt = -1200\text{ A}/\mu\text{s}$<br>$T_j = 25\text{ °C}$<br>$T_j = 125\text{ °C}$ | $Q_{rr}$ | - | 11  | -   | $\mu\text{C}$ |
|   |          | - | 36  | -   |               |

Power dissipation

$P_{tot} = f(T_C)$

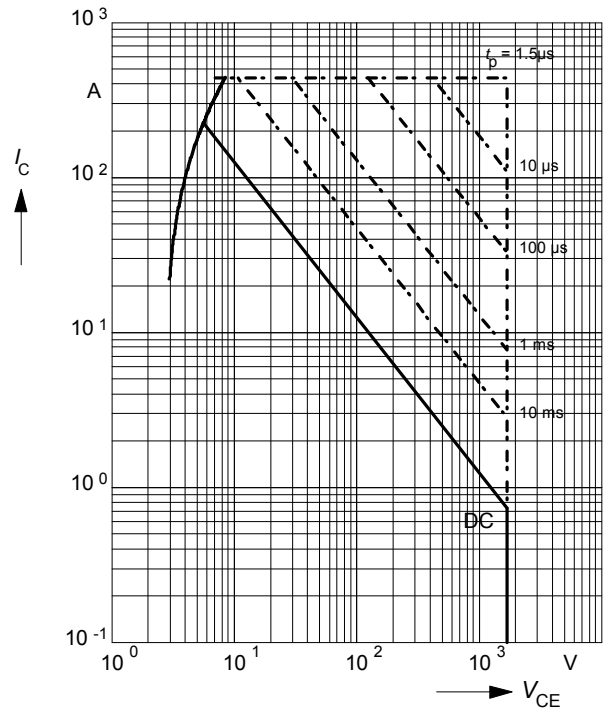
parameter:  $T_j \leq 150\text{ }^\circ\text{C}$



Safe operating area

$I_C = f(V_{CE})$

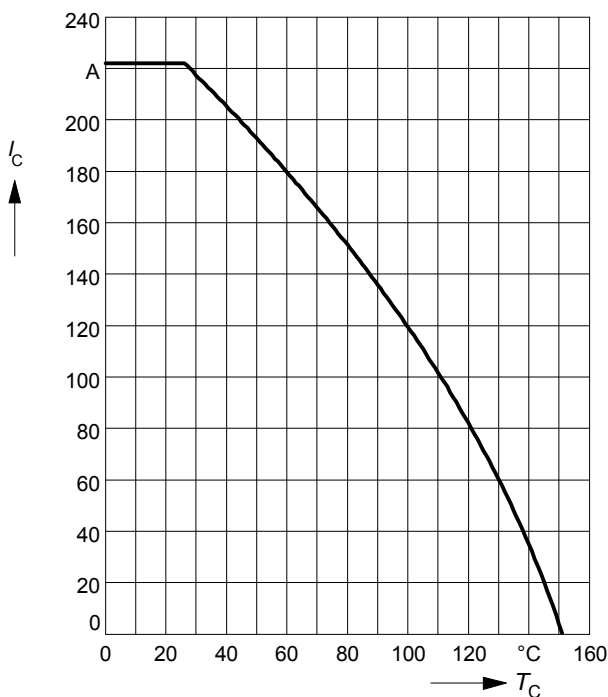
parameter:  $D = 0, T_C = 25\text{ }^\circ\text{C}, T_j \leq 150\text{ }^\circ\text{C}$



Collector current

$I_C = f(T_C)$

parameter:  $V_{GE} \geq 15\text{ V}, T_j \leq 150\text{ }^\circ\text{C}$



Transient thermal impedance IGBT

$Z_{thJC} = f(t_p)$

parameter:  $D = t_p / T$

