

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
V <sub>CES</sub>	Collector-emitter voltage (s <sub>GS</sub> = 0)	600	V
I <sub>C</sub> <sup>(1)</sup>	Collector current (continuous) at T <sub>C</sub> = 25°C	100	A
I <sub>C</sub> <sup>(1)</sup>	Collector current (continuous) at T <sub>C</sub> = 100°C	50	A
I <sub>CL</sub> <sup>(2)</sup>	Collector current (pulsed)	250	A
V <sub>GE</sub>	Gate-emitter voltage	± 20	V
I <sub>F</sub>	Diode RMS forward current at T <sub>C</sub> =25°C	30	A
P <sub>TOT</sub>	Total dissipation at T <sub>C</sub> = 25°C	260	W
T <sub>stg</sub>	Storage temperature	-55 to 150	°C
T <sub>j</sub>	Operating junction temperature		

1. Calculated according to the iterative formula:

$$I_C(T_C) = \frac{T_{JMAX} - T_C}{R_{THJ-C} \times V_{CESAT(MAX)}(T_C, I_C)}$$

2. Pulse width limited by T<sub>jmax</sub>

**Table 3. Thermal resistance**

Symbol	Parameter	Min	Typ	Max	Unit
R <sub>thj-case</sub>	Thermal resistance junction-case (IGBT)	--	--	0.48	°C/W
R <sub>thj-case</sub>	Thermal resistance junction-case (diode)	--	--	1.5	°C/W
R <sub>thj-amb</sub>	Thermal resistance junction-amb	--	--	50	°C/W

## 2 Electrical characteristics

( $T_J = 25\text{ °C}$  unless otherwise specified)

**Table 4. Static**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{BR(CES)}$	Collector-emitter breakdown voltage	$I_C = 1\text{ mA}$ , $V_{GE} = 0$	600			V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$V_{GE} = 15\text{ V}$ , $I_C = 40\text{ A}$ $V_{GE} = 15\text{ V}$ , $I_C = 40\text{ A}$ , $T_C = 125\text{ °C}$		2.1 1.9	2.6	V V
$V_{GE(th)}$	Gate threshold voltage	$V_{CE} = V_{GE}$ , $I_C = 250\text{ }\mu\text{A}$	3.75		5.75	V
$I_{CES}$	Collector cut-off current ( $V_{GE} = 0$ )	$V_{CE} = \text{Max rating}$ , $T_C = 25\text{ °C}$ $V_{CE} = \text{Max rating}$ , $T_C = 125\text{ °C}$			500 5	$\mu\text{A}$ mA
$I_{GES}$	Gate-emitter leakage current ( $V_{CE} = 0$ )	$V_{GE} = \pm 20\text{ V}$ , $V_{CE} = 0$			$\pm 100$	nA
$g_{fs}$	Forward transconductance	$V_{CE} = 15\text{ V}$ , $I_C = 40\text{ A}$		25		S

**Table 5. Dynamic**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$C_{ies}$	Input capacitance	$V_{CE} = 25\text{ V}$ , $f = 1\text{ MHz}$ , $V_{GE} = 0$		4700		pF
$C_{oes}$	Output capacitance			410		pF
$C_{res}$	Reverse transfer capacitance			90		pF
$Q_g$	Total gate charge	$V_{CE} = 390\text{ V}$ , $I_C = 40\text{ A}$ ,		195		nC
$Q_{ge}$	Gate-emitter charge	$V_{GE} = 15\text{ V}$ ,		32		nC
$Q_{gc}$	Gate-collector charge	<a href="#">Figure 17</a>		82		nC