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Maximum ratings

| Parameter | Symbol | Value | Unit |
|---|-------------|---------------|--------------------|
| Collector-emitter voltage, $T_{vj} \geq 25^{\circ}\text{C}$ | V_{CE} | 600 | V |
| DC collector current, limited by T_{vjmax} $T_C = 25^{\circ}\text{C}$ $T_C = 100^{\circ}\text{C}$ | I_C | 60.0 30.0 | A |
| Pulsed collector current, t_p limited by T_{vjmax} | I_{Cpuls} | 120.0 | A |
| Turn off safe operating area $V_{CE} \leq 600\text{V}$, $T_{vj} \leq 175^{\circ}\text{C}$, $t_p = 1\mu\text{s}$ | - | 120.0 | A |
| Gate-emitter voltage | V_{GE} | ± 20 | V |
| Short circuit withstand time $V_{GE} = 15.0\text{V}$, $V_{CC} \leq 400\text{V}$ Allowed number of short circuits < 1000 Time between short circuits: $\geq 1.0\text{s}$ $T_{vj} = 150^{\circ}\text{C}$ | t_{SC} | 5 | μs |
| Power dissipation $T_C = 25^{\circ}\text{C}$ Power dissipation $T_C = 100^{\circ}\text{C}$ | P_{tot} | 187.0 94.0 | W |
| Operating junction temperature | T_{vj} | -40...+175 | $^{\circ}\text{C}$ |
| Storage temperature | T_{stg} | -55...+150 | $^{\circ}\text{C}$ |
| Soldering temperature, reflow soldering (MSL1 according to JEDEC J-STA-020) | | 260 | $^{\circ}\text{C}$ |

Thermal Resistance

| Parameter | Symbol | Conditions | Max. Value | Unit |
|---|---------------|------------|------------|------|
| Characteristic | | | | |
| IGBT thermal resistance, junction - case | $R_{th(j-c)}$ | | 0.80 | K/W |
| Thermal resistance, min. footprint junction - ambient | $R_{th(j-a)}$ | | 65 | K/W |
| Thermal resistance, 6cm ² Cu on PCB junction - ambient | $R_{th(j-a)}$ | | 40 | K/W |

Electrical Characteristic, at $T_{vj} = 25^{\circ}\text{C}$, unless otherwise specified

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|---------------|---|-------------|----------------------|----------------|---------------|
| | | | min. | typ. | max. | |
| Static Characteristic | | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE} = 0\text{V}$, $I_C = 2.00\text{mA}$ | 600 | - | - | V |
| Collector-emitter saturation voltage | V_{CEsat} | $V_{GE} = 15.0\text{V}$, $I_C = 30.0\text{A}$ $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 175^{\circ}\text{C}$ | - - - | 1.95 2.30 2.50 | 2.40 - - | V |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C = 0.43\text{mA}$, $V_{CE} = V_{GE}$ | 4.1 | 5.1 | 5.7 | V |
| Zero gate voltage collector current | I_{CES} | $V_{CE} = 600\text{V}$, $V_{GE} = 0\text{V}$ $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 175^{\circ}\text{C}$ | - - | - - | 40.0 2000.0 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE} = 0\text{V}$, $V_{GE} = 20\text{V}$ | - | - | 100 | nA |
| Transconductance | g_{fs} | $V_{CE} = 20\text{V}$, $I_C = 30.0\text{A}$ | - | 16.0 | - | S |