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TRENCHSTOP™ RC-Series for hard switching applications

Maximum Ratings

For optimum lifetime and reliability, Infineon recommends operating conditions that do not exceed 80% of the maximum ratings stated in this datasheet.

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	20.0 10.0	A
Pulsed collector current, t_p limited by T_{vjmax}	I_{Cpuls}	30.0	A
Turn off safe operating area $V_{CE} \leq 600\text{V}$, $T_{vj} \leq 175^{\circ}\text{C}$, $t_p = 1\mu\text{s}$	-	30.0	A
Diode forward current, limited by T_{vjmax} $T_c = 25^{\circ}\text{C}$ $T_c = 100^{\circ}\text{C}$	I_F	20.0 10.0	A
Diode pulsed current, t_p limited by T_{vjmax}	I_{Fpuls}	30.0	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 $T_c = 25^{\circ}\text{C}$	P_{tot}	150.0	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	Value			Unit
			min.	typ.	max.	
R_{th} Characteristics						
IGBT thermal resistance, ¹⁾ junction - case	$R_{th(j-c)}$		-	-	1.00	K/W
Diode thermal resistance, ²⁾ junction - case	$R_{th(j-c)}$		-	-	2.60	K/W
Thermal resistance, min. footprint junction - ambient	$R_{th(j-a)}$		-	-	75	K/W
Thermal resistance, 6cm ² Cu on PCB junction - ambient	$R_{th(j-a)}$		-	-	50	K/W

¹⁾ R_{th}/Z_{th} based on single cooling pulse. Please be aware that a correct R_{th} measurement of the IGBT, is not possible using a thermocouple.

²⁾ R_{th}/Z_{th} based on single cooling pulse. Please be aware that a correct R_{th} measurement of the Diode, is not possible using a thermocouple.