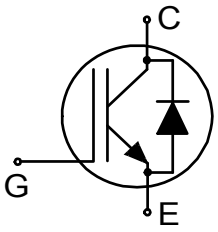
TRENCHSTOP™ RC-Series for hard switching applications

IGBT with integrated diode in packages offering space saving advantage

Features:

TRENCHSTOP™ Reverse Conducting (RC) technology for 600V applications offering
- Optimised V_{CEsat} and V_F for low conduction losses
- Smooth switching performance leading to low EMI levels
- Very tight parameter distribution
- Operating range of 1 to 20kHz
- Maximum junction temperature 175°C
- Short circuit capability of 5µs
- Best in class current versus package size performance
- Qualified according to JEDEC for target applications
- Pb-free lead plating; RoHS compliant (for PG-TO252: solder temperature 260°C, MSL1)
- Complete product spectrum and PSpice Models: http://www.infineon.com/igbt/



Applications:

- Consumer motor drives

Green

Halogen-Free

RoHS

Key Performance and Package Parameters

Type	V_{CE}	I_C	V_{CEsat}, T_{vj}=25°C	T_{vjmax}	Marking	Package
IKD06N60R	600V	6A	1.65V	175°C	K06R60	PG-TO252-3

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, $T_{vj} \geq 25°C$	V_{CE}	600	V
DC collector current, limited by T_{vjmax} $T_c = 25°C$ $T_c = 100°C$	I_C	12.0 6.0	A
Pulsed collector current, t_p limited by T_{vjmax}	I_{Cpuls}	18.0	A
Turn off safe operating area $V_{CE} \leq 600V$, $T_{vj} \leq 175°C$, $t_p = 1\mu s$	-	18.0	A
Diode forward current, limited by T_{vjmax} $T_c = 25°C$ $T_c = 100°C$	I_F	12.0 6.0	A
Diode pulsed current, t_p limited by T_{vjmax}	I_{Fpuls}	18.0	A
Gate-emitter voltage	V_{GE}	±20	V
Short circuit withstand time $V_{GE} = 15.0V$, $V_{CC} \leq 400V$ Allowed number of short circuits < 1000 Time between short circuits: ≥ 1.0s $T_{vj} = 150°C$	t_{SC}	5	µs
Power dissipation $T_c = 25°C$	P_{tot}	100.0	W
Operating junction temperature	T_{vj}	-40...+175	°C
Storage temperature	T_{stg}	-55...+150	°C
Soldering temperature, reflow soldering (MSL1 according to JEDEC J-STA-020)		260	°C

Thermal Resistance

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
R_{th} Characteristics						
IGBT thermal resistance,[1] junction - case	$R_{th(j-c)}$		-	-	1.50	K/W
Diode thermal resistance,[2] junction - case	$R_{th(j-c)}$		-	-	3.60	K/W
Thermal resistance, min. footprint junction - ambient	$R_{th(j-a)}$		-	-	75	K/W
Thermal resistance, 6cm² Cu on PCB junction - ambient	$R_{th(j-a)}$		-	-	50	K/W

[1] Rth/Zth based on single cooling pulse. Please be aware that a correct Rth measurement of the IGBT, is not possible using a thermocouple.
[2] Rth/Zth based on single cooling pulse. Please be aware that a correct Rth measurement of the Diode, is not possible using a thermocouple.