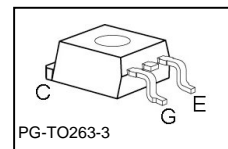
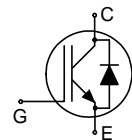


Low Loss DuoPack : IGBT in TRENCHSTOP™ and Fieldstop technology with soft, fast recovery anti-parallel Emitter Controlled HE diode



Features

- Very low $V_{CE(sat)}$ 1.5V (typ.)
- Maximum Junction Temperature 175°C
- Short circuit withstand time 5 μ s
- Designed for frequency inverters for washing machines, fans, pumps and vacuum cleaners
- TRENCHSTOP™ and Fieldstop technology for 600V applications offers :
 - very tight parameter distribution
 - high ruggedness, temperature stable behavior
 - very high switching speed
- Low EMI
- Qualified according to JEDEC¹ for target applications
- Pb-free lead plating; RoHS compliant
- Complete product spectrum and PSpice Models : <http://www.infineon.com/igbt/>



Type	V_{CE}	$I_C; T_C=100^\circ\text{C}$	$V_{CE(sat), T_j=25^\circ\text{C}}$	$T_{j,max}$	Marking	Package
IKB06N60T	600V	6A	1.5V	175°C	K06T60	PG-TO263-3

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage, $T_j \geq 25^\circ\text{C}$	V_{CE}	600	V
DC collector current, limited by $T_{j,max}$	I_C	12	A
$T_C = 25^\circ\text{C}$		6	
$T_C = 100^\circ\text{C}$		6	
Pulsed collector current, t_p limited by $T_{j,max}$	$I_{C,puls}$	18	
Turn off safe operating area, $V_{CE} = 600\text{V}$, $T_j = 175^\circ\text{C}$, $t_p = 1\mu\text{s}$	-	18	
Diode forward current, limited by $T_{j,max}$	I_F	12	
$T_C = 25^\circ\text{C}$		6	
$T_C = 100^\circ\text{C}$		6	
Diode pulsed current, t_p limited by $T_{j,max}$	$I_{F,puls}$	18	
Gate-emitter voltage	V_{GE}	± 20	V
Short circuit withstand time ²⁾	t_{SC}	5	μs
$V_{GE} = 15\text{V}$, $V_{CC} \leq 400\text{V}$, $T_j \leq 150^\circ\text{C}$			
Power dissipation	P_{tot}	88	W
$T_C = 25^\circ\text{C}$			
Operating junction temperature	T_j	-40...+175	°C
Storage temperature	T_{stg}	-55...+150	
Soldering temperature (reflow soldering, MSL1)		260	

¹ J-STD-020 and JESD-022

²⁾ Allowed number of short circuits: <1000; time between short circuits: >1s.

Thermal Resistance

Parameter	Symbol	Conditions	Max. Value	Unit
Characteristic				
IGBT thermal resistance, junction – case	R_{thJC}		1.7	K/W
Diode thermal resistance, junction – case	R_{thJCD}		2.6	
Thermal resistance, junction – ambient	R_{thJA}		62	
Thermal resistance, junction – ambient	R_{thJA}	Footprint 6cm ² Cu	65 40	

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

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Static Characteristic						
Collector-emitter breakdown voltage	$V_{(BR)CES}$	$V_{GE}=0V$, $I_C=0.25mA$	600	-	-	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$V_{GE} = 15V$, $I_C=6A$ $T_j=25\text{ °C}$ $T_j=175\text{ °C}$	- -	1.5 1.8	2.05	
Diode forward voltage	V_F	$V_{GE}=0V$, $I_F=6A$ $T_j=25\text{ °C}$ $T_j=175\text{ °C}$	- -	1.6 1.6	2.05 -	
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C=0.18mA$, $V_{CE}=V_{GE}$	4.1	4.6	5.7	
Zero gate voltage collector current	I_{CES}	$V_{CE}=600V$, $V_{GE}=0V$ $T_j=25\text{ °C}$ $T_j=175\text{ °C}$	- -	- -	40 700	μA
Gate-emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$	-	-	100	nA
Transconductance	g_{fs}	$V_{CE}=20V$, $I_C=6A$	-	3.6	-	S
Integrated gate resistor	R_{Gint}		none			Ω

Dynamic Characteristic

Input capacitance	C_{iss}	$V_{CE}=25V$, $V_{GE}=0V$, $f=1MHz$	-	368	-	pF
Output capacitance	C_{oss}		-	28	-	
Reverse transfer capacitance	C_{riss}		-	11	-	
Gate charge	Q_{Gate}	$V_{CC}=480V$, $I_C=6A$ $V_{GE}=15V$	-	42	-	nC
Internal emitter inductance measured 5mm (0.197 in.) from case	L_E		-	7	-	nH
Short circuit collector current ¹⁾	$I_{C(SC)}$	$V_{GE}=15V$, $t_{SC} \leq 5\mu s$ $V_{CC} = 400V$, $T_j = 25\text{ °C}$	-	55	-	A

¹⁾ Allowed number of short circuits: <1000; time between short circuits: >1s.