IGBT - Field Stop

600 V, 40 A

FGH40N60SMD

Description

Using novel field stop IGBT technology, ON Semiconductor's new series of field stop 2nd generation IGBTs offer the optimum performance for solar inverter, UPS, welder, telecom, ESS and PFC applications where low conduction and switching losses are essential.

Features

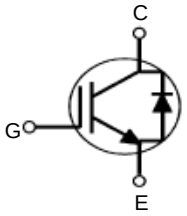
- Maximum Junction Temperature : T_J = 175°C
- Positive Temperature Co−efficient for Easy Parallel Operating
- High Current Capability
- Low Saturation Voltage: $V_{CE(sat)}$ = 1.9 V (Typ) @ I_C = 40 A
- High Input Impedance
- Fast Switching: E_{OFF} = 6.5 μJ/A
- Tighten Parameter Distribution
- This Device is Pb−Free, Halogen Free/BFR Free and is RoHS Compliant

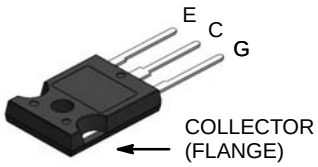
Applications

- Solar Inverter, Welder, UPS, PFC, Telecom, ESS

ON Semiconductor®

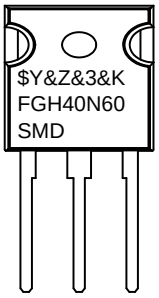
www.onsemi.com





TO−247−3LD
CASE 340CK

MARKING DIAGRAMS



$Y	= ON Semiconductor Logo
&Z	= Assembly Plant Code
&3	= Numeric Date Code
&K	= Lot Code
FGH40N60SMD	= Specific Device Code

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Collector to Emitter Voltage		V_{CES}	600	V
Gate to Emitter Voltage		V_{GES}	±20	V
Transient Gate to Emitter Voltage			±30	V
Collector Current	T_C = 25°C	I_C	80	A
Collector Current	T_C = 100°C		40	A
Pulsed Collector Current (Note 1)	T_C = 25°C	I_{CM}	120	A
Diode Forward Current	T_C = 25°C	I_F	40	A
Diode Forward Current	T_C = 100°C		20	A
Pulsed Diode Maximum Forward Current (Note 1)		I_{FM}	120	A
Maximum Power Dissipation	T_C = 25°C	P_D	349	W
Maximum Power Dissipation	T_C = 100°C		174	W
Operating Junction Temperature		T_J	−55 to +175	°C
Storage Temperature Range		T_{stg}	−55 to +175	°C
Maximum Lead Temp. for Soldering Purposes, 1/8” from Case for 5 Seconds		T_L	300	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. Repetitive rating: Pulse width limited by max. junction temperature.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case (IGBT)	$R_{\theta JC}$	0.43	°C/W
Thermal Resistance, Junction to Case (Diode)	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	40	°C/W

PACKAGE MARKING AND ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FGH40N60SMD	FGH40N60SMD	TO−247−3LD	Tube	N/A	N/A	30

ELECTRICAL CHARACTERISTICS OF THE IGBT (T_C = 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector to Emitter Breakdown Voltage	BV_{CES}	V_{GE} = 0 V, I_C = 250 μA	600	–	–	V
Temperature Coefficient of Breakdown Voltage	ΔBV_{CES} / ΔT_J	V_{GE} = 0 V, I_C = 250 μA	–	0.6	–	V/°C
Collector Cut−Off Current	I_{CES}	V_{CE} = V_{CES}, V_{GE} = 0 V	–	–	250	μA
G−E Leakage Current	I_{GES}	V_{GE} = V_{GES}, V_{CE} = 0 V	–	–	±400	nA
ON CHARACTERISTICS						
G−E Threshold Voltage	$V_{GE(th)}$	I_C = 250 μA, V_{CE} = V_{GE}	3.5	4.5	6.0	V
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 40 A, V_{GE} = 15 V	–	1.9	2.5	V
		I_C = 40 A, V_{GE} = 15 V, T_C = 175°C	–	2.1	–	V