



ON Semiconductor®

# FGY120T65SPD-F085

## 650V, 120A Field Stop Trench IGBT With Soft Fast Recovery Diode

### Features

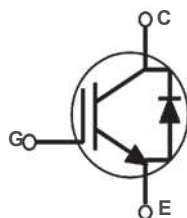
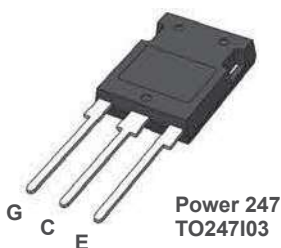
- AEC-Q101 Qualified
- Very low saturation voltage :  $V_{CE(sat)} = 1.5 \text{ V(Typ.) @ } I_C = 120 \text{ A}$
- Maximum junction temperature :  $T_J = 175 \text{ }^\circ\text{C}$
- Positive temperature Co-efficient
- Tight parameter distribution
- High input impedance
- 100% of the parts are dynamically tested
- Short circuit ruggedness >  $6 \mu\text{s @ } 25 \text{ }^\circ\text{C}$
- Copacked with soft, fast recovery Extremerfast diode

### Benefits

- Very Low conduction and switching losses for a high efficiency operation in various applications
- Rugged transient reliability
- Outstanding parallel operation performance with balance current sharing
- Low EMI

### Applications

- Traction inverter for HEV/EV
- Auxiliary DC/AC converter
- Motor drives
- Other power-train applications requiring high power switch



### Absolute Maximum Ratings

Symbol	Description	Ratings	Units
$V_{CES}$	Collector to Emitter Voltage	650	V
$V_{GES}$	Gate to Emitter Voltage	$\pm 20$	V
	Transient Gate to Emitter Voltage	$\pm 30$	V
$I_C$	Collector Current (Note1) @ $T_C = 25 \text{ }^\circ\text{C}$	240	A
	Collector Current @ $T_C = 100 \text{ }^\circ\text{C}$	220	A
$I_{Nominal}$	Nominal Current	120	A
$I_{CM}$	Pulsed Collector Current	378	A
$I_F$	Diode Forward Current (Note1) @ $T_C = 25 \text{ }^\circ\text{C}$	240	A
	Diode Forward Current @ $T_C = 100 \text{ }^\circ\text{C}$	188	A
$P_D$	Maximum Power Dissipation @ $T_C = 25 \text{ }^\circ\text{C}$	882	W
	Maximum Power Dissipation @ $T_C = 100 \text{ }^\circ\text{C}$	441	W
SCWT	Short Circuit Withstand Time @ $T_C = 25 \text{ }^\circ\text{C}$	6	$\mu\text{s}$
dV/dt	Voltage Transient Ruggedness (Note2)	10	V/ns
$T_J$	Operating Junction Temperature	-55 to +175	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55 to +175	$^\circ\text{C}$
$T_L$	Maximum Lead Temp. for soldering Purposes, 1/8" from case for 5 seconds	300	$^\circ\text{C}$

#### Notes:

1: Limited by bondwire

2:  $V_{CC} = 400 \text{ V}$ ,  $V_{GE} = 15 \text{ V}$ ,  $I_{CE} = 378 \text{ A}$ , Inductive Load