



# TIG056BF

# **N-Channel IGBT**

## **430V, 240A, VCE(sat); 3.6V TO-220F-3FS**

ON Semiconductor®

<http://onsemi.com>

## Features

- Low-saturation voltage
  - Ultrahigh speed switching
  - Enhancement type
  - Protection diode in

## Specifications

### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

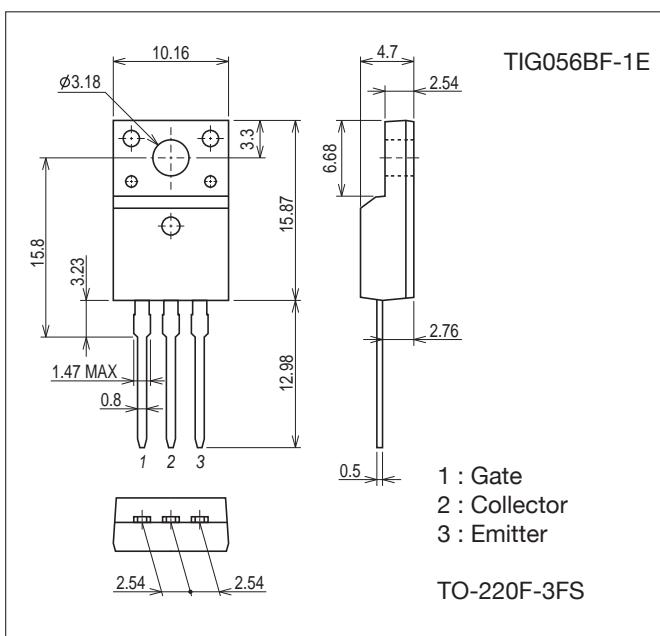
Parameter	Symbol	Conditions	Ratings	Unit
Collector to Emitter Voltage	V <sub>CES</sub>		430	V
Gate to Emitter Voltage	V <sub>GES</sub>		±33	V
Collector Current (Pulse)	I <sub>CP</sub>	V <sub>GE</sub> =15V, C <sub>M</sub> =2000μF	240	A
Allowable Power Dissipation	P <sub>D</sub>	T <sub>C</sub> =25°C	30	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

## Package Dimensions

unit : mm (typ)

7528-002

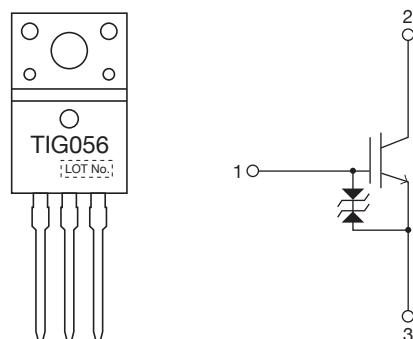


## Ordering & Package Information

Device	Package	Shipping	memo
TIG056BF-1E	TO-220F-3FS SC-67	50 pcs./magazine	Pb-Free

## Marking

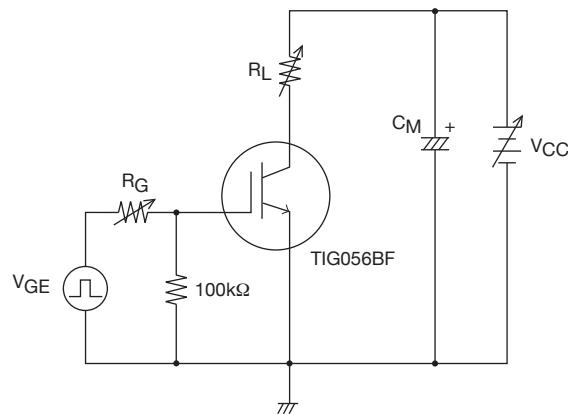
## Electrical Connection

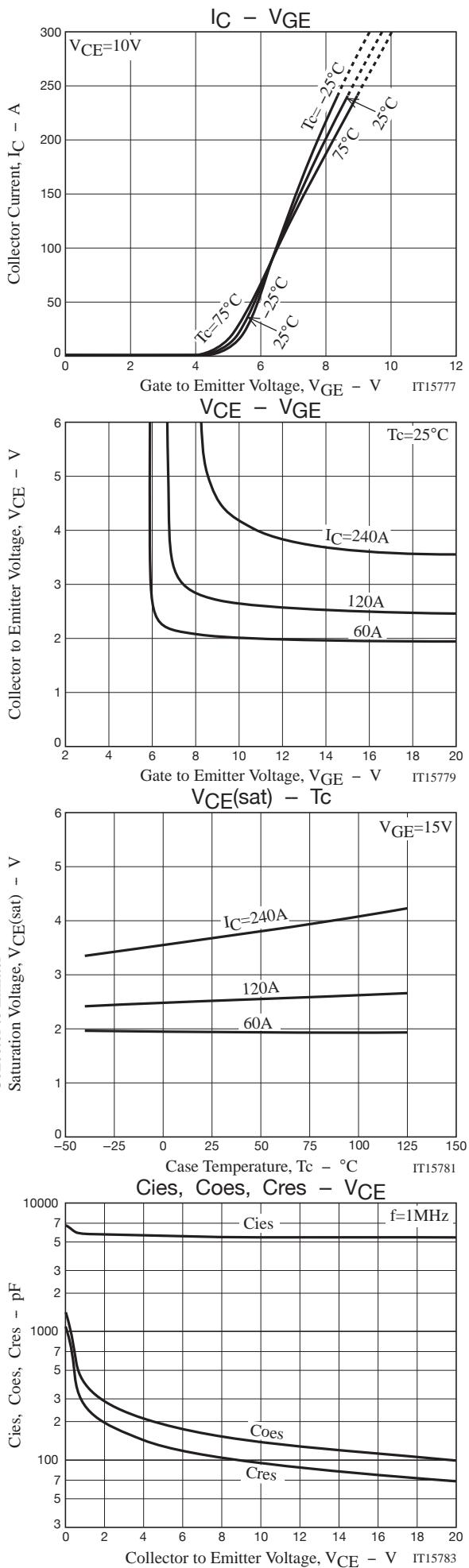
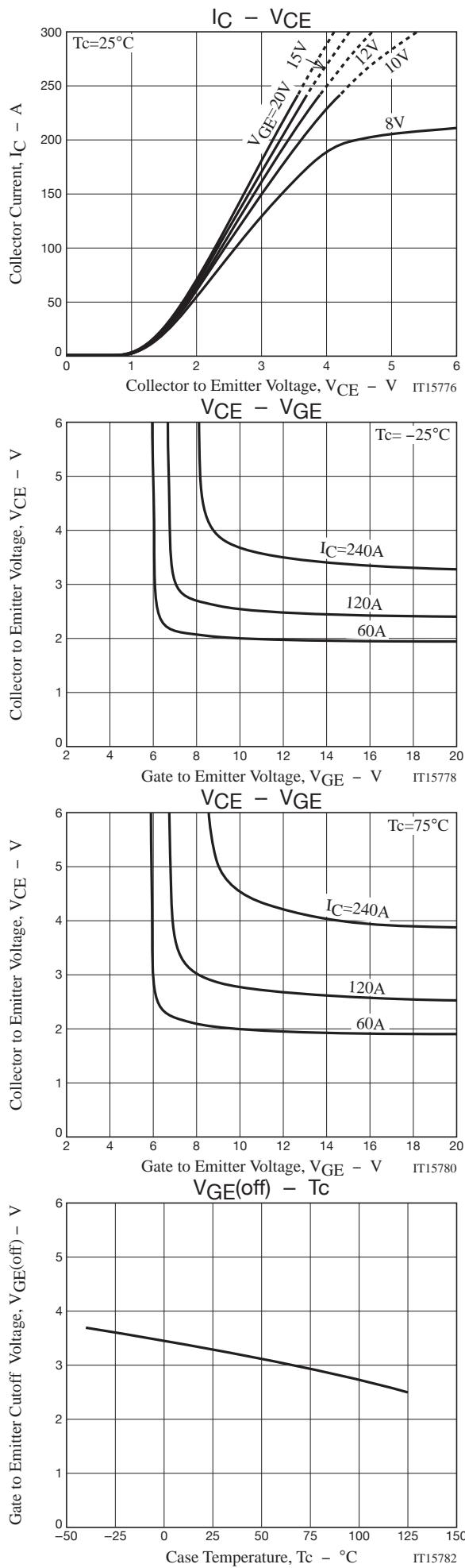


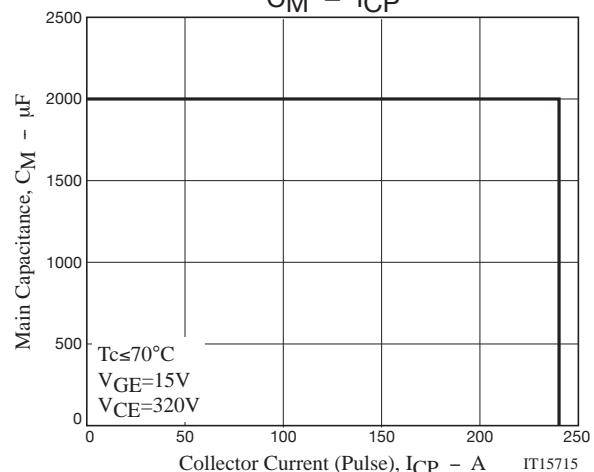
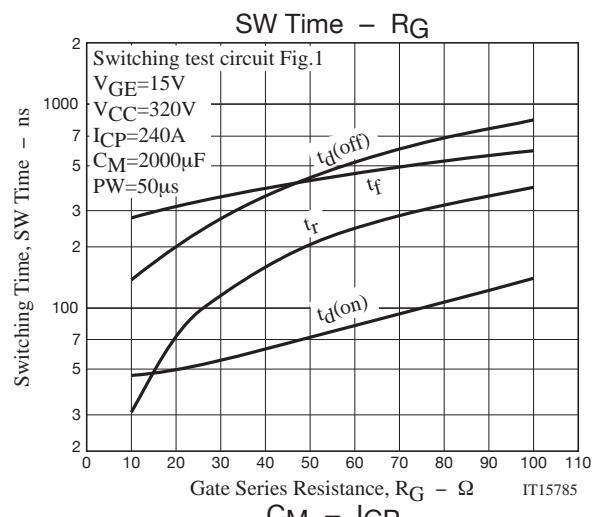
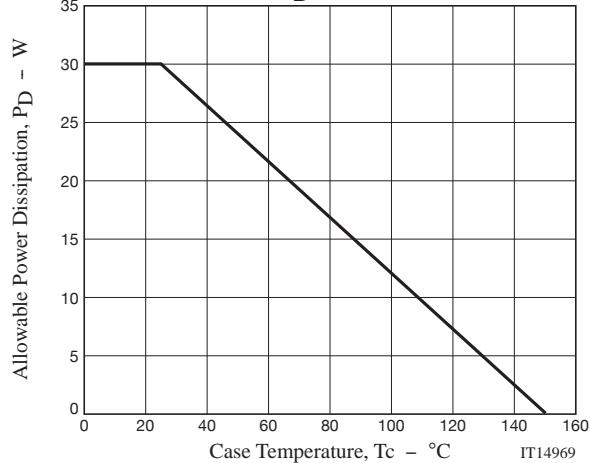
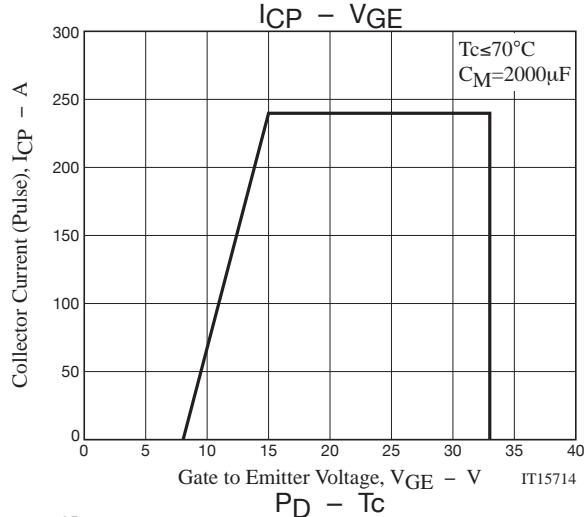
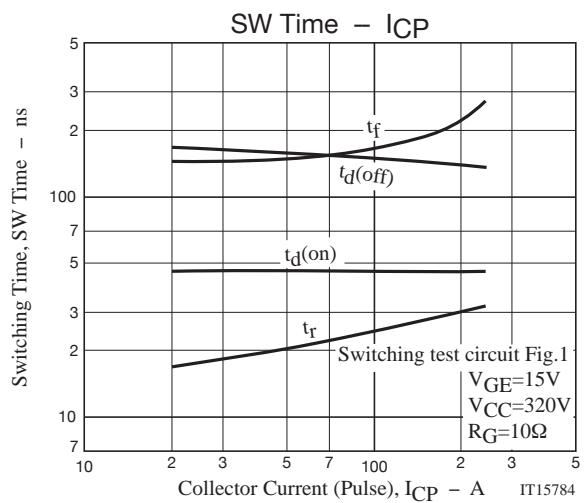
## Electrical Characteristics at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector to Emitter Breakdown Voltage	$V(BR)_{CES}$	$I_C=2\text{mA}, V_{GE}=0\text{V}$	430			V
Collector to Emitter Cutoff Current	$I_{CES}$	$V_{CE}=320\text{V}, V_{GE}=0\text{V}$			100	$\mu\text{A}$
Gate to Emitter Leakage Current	$I_{GES}$	$V_{GE}=\pm 30\text{V}, V_{CE}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Gate to Emitter Threshold Voltage	$V_{GE(\text{off})}$	$V_{CE}=10\text{V}, I_C=1\text{mA}$	2.5		5.0	V
Collector to Emitter Saturation Voltage	$V_{CE(\text{sat})}$	$I_C=240\text{A}, V_{GE}=15\text{V}$		3.6	5.0	V
Input Capacitance	$C_{IES}$	$V_{CE}=20\text{V}, f=1\text{MHz}$		5500		$\text{pF}$
Output Capacitance	$C_{OES}$			100		$\text{pF}$
Reverse Transfer Capacitance	$C_{RES}$			70		$\text{pF}$
Turn-ON Delay Time	$t_{d(\text{on})}$	$V_{CE}=320\text{V}, I_C=240\text{A}, V_{GE}=15\text{V}, R_G=10\Omega$		46		ns
Rise Time	$t_r$			32		ns
Turn-OFF Delay Time	$t_{d(\text{off})}$			140		ns
Fall Time	$t_f$			270		ns

Fig1 Large Current R Load Switching Circuit

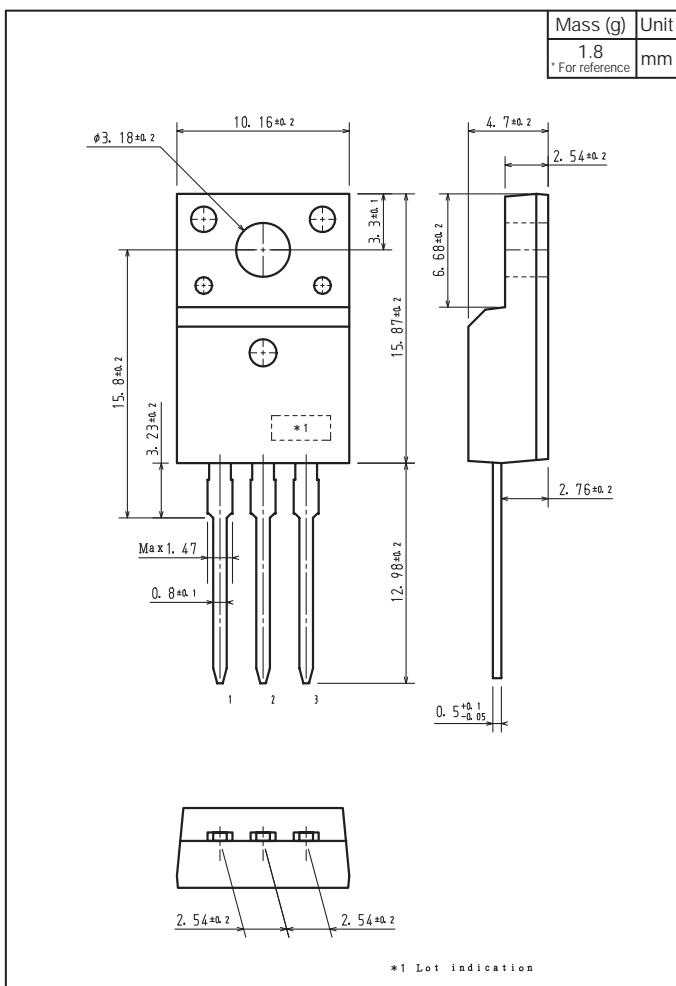






## Outline Drawing

TIG056BF-1E



Note on usage : TIG056BF has protection diode between gate and emitter but handling it requires sufficient care to be taken.

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