Ordering number : ENA1775B

TIG056BF

N-Channel IGBT
430V, 240A, V_{CE}(sat); 3.6V TO-220F-3FS

ON Semiconductor®

http://onsemi.com

Features

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

Specifications

Absolute Maximum Ratings at Ta=25°C

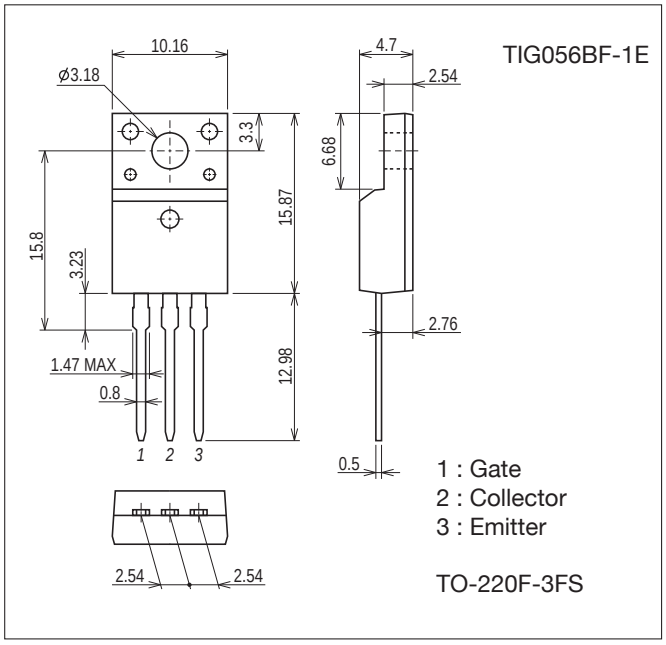
Parameter	Symbol	Conditions	Ratings	Unit
Collector to Emitter Voltage	V_{CES}		430	V
Gate to Emitter Voltage	V_{GES}		±33	V
Collector Current (Pulse)	I_{CP}	V_{GE}=15V, C_M=2000μF	240	A
Allowable Power Dissipation	P_D	Tc=25°C	30	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°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)

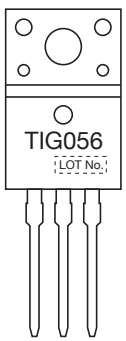
7528-002



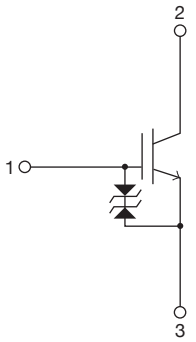
Ordering & Package Information

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

Marking



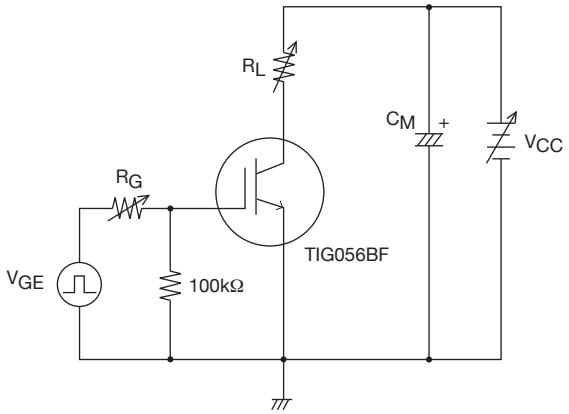
Electrical Connection

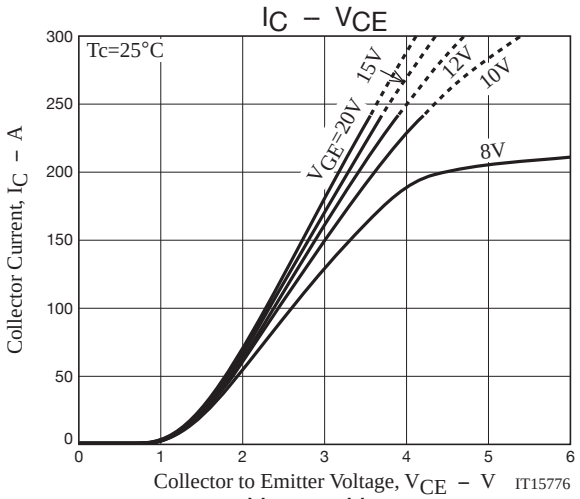


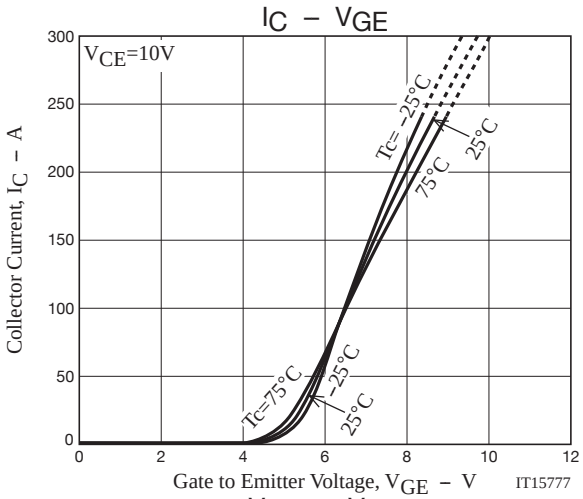
Electrical Characteristics at Ta=25°C

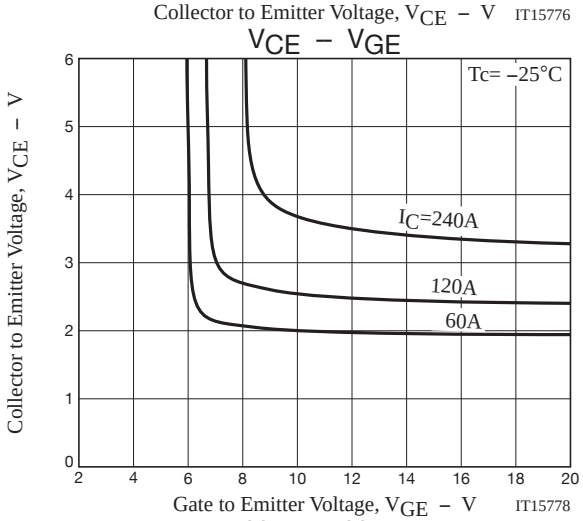
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector to Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=2mA, V_{GE}=0V	430			V
Collector to Emitter Cutoff Current	I_{CES}	V_{CE}=320V, V_{GE}=0V			100	μA
Gate to Emitter Leakage Current	I_{GES}	V_{GE}=±30V, V_{CE}=0V			±10	μA
Gate to Emitter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

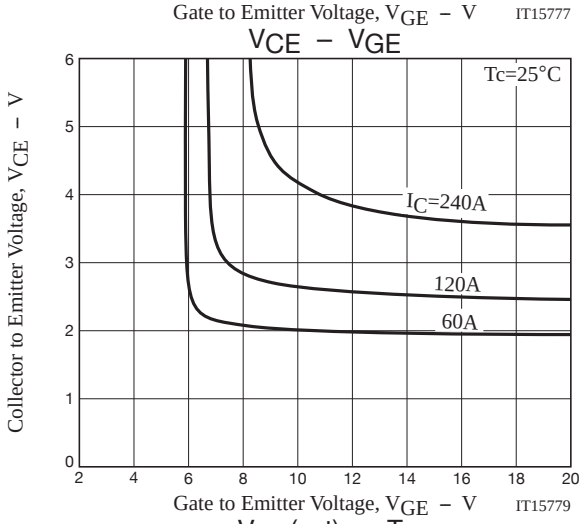
Fig1 Large Current R Load Switching Circuit

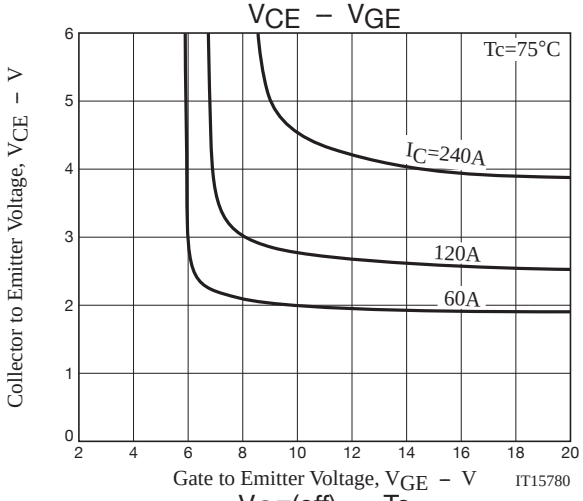


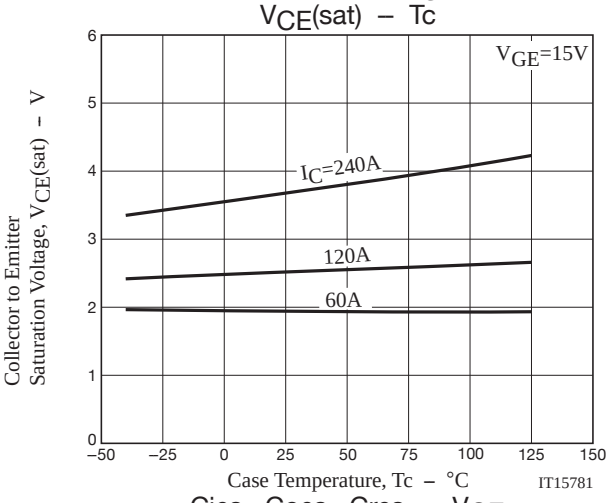

IC – VCE
Tc=25°C
VGE=20V
15V
12V
10V
8V
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT15776

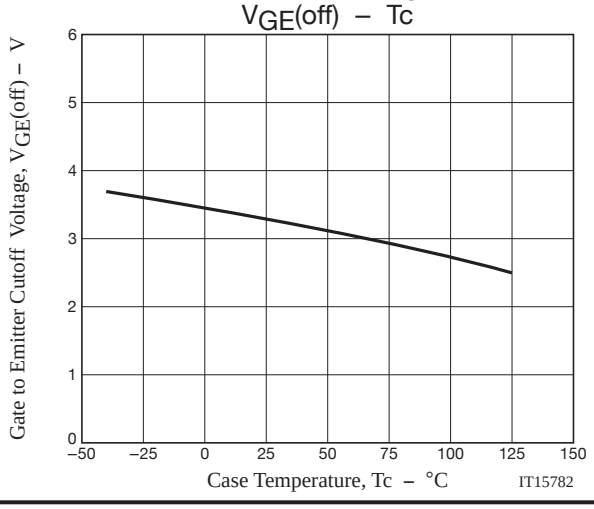

IC – VGE
VCE=10V
Tc= –25°C
25°C
75°C
Tc=75°C
–25°C
25°C
Collector Current, IC – A
Gate to Emitter Voltage, VGE – V
IT15777

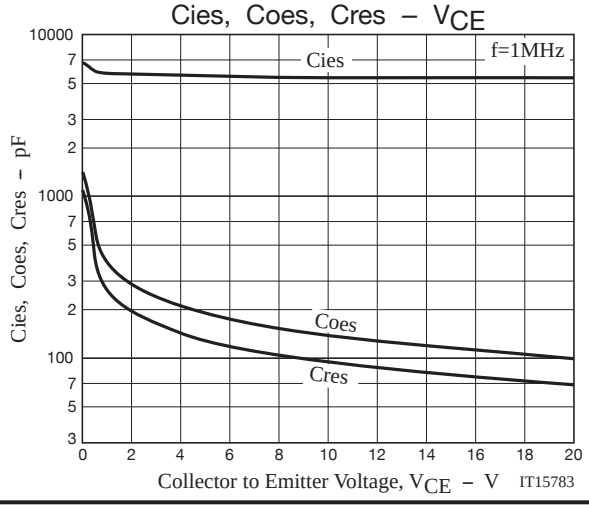

VCE – VGE
Tc= –25°C
IC=240A
120A
60A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15778


VCE – VGE
Tc=25°C
IC=240A
120A
60A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15779

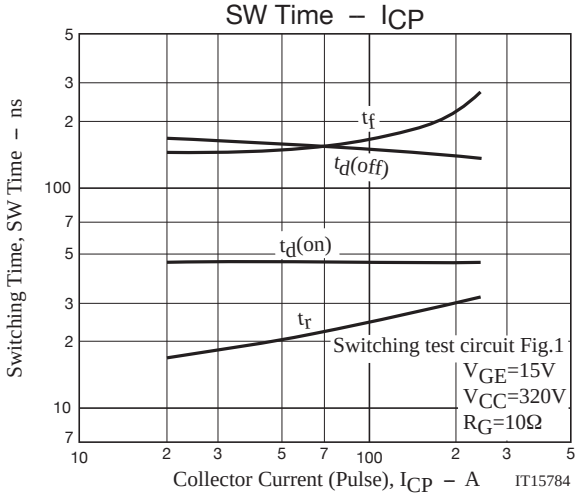

VCE – VGE
Tc=75°C
IC=240A
120A
60A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15780


VCE(sat) – Tc
VGE=15V
IC=240A
120A
60A
Collector to Emitter Saturation Voltage, VCE(sat) – V
Case Temperature, Tc – °C
IT15781

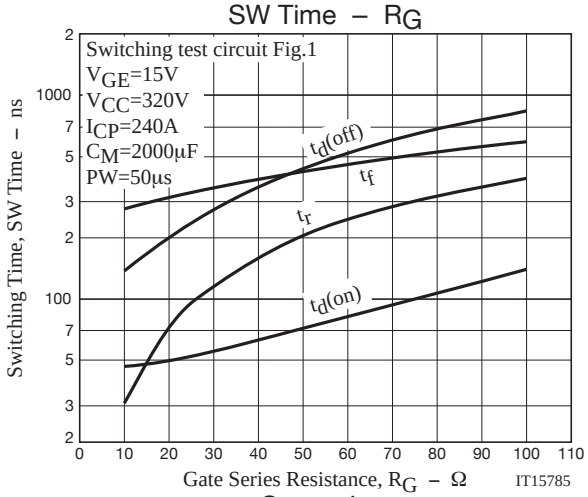

VGE(off) – Tc
Gate to Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT15782


Cies, Coes, Cres – VCE
f=1MHz
Cies
Coes
Cres
Cies, Coes, Cres – pF
Collector to Emitter Voltage, VCE – V
IT15783

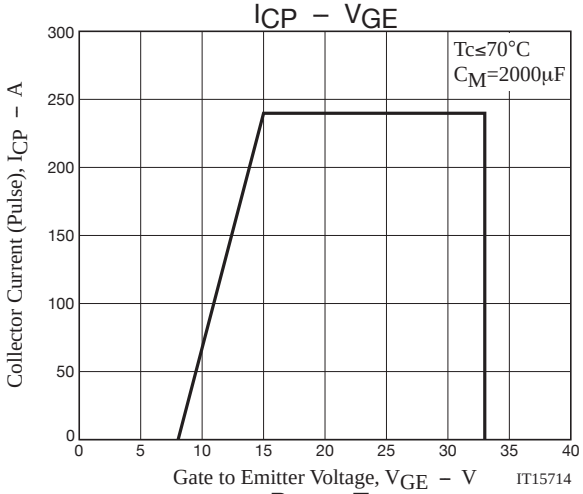
SW Time – I_{CP}



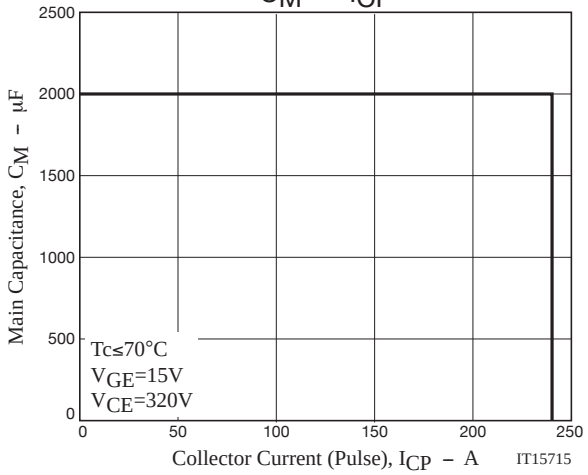
SW Time – R_G



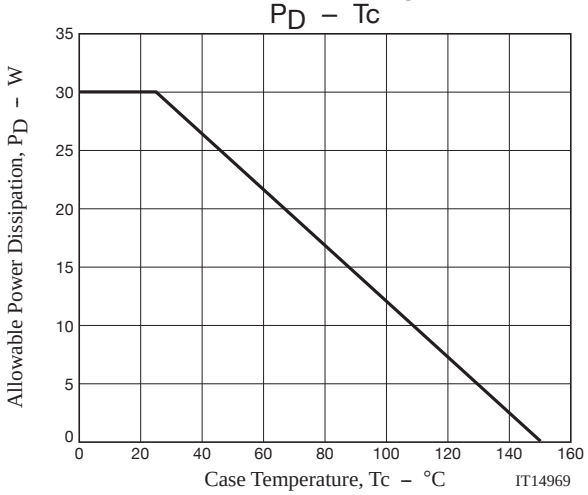
I_{CP} – V_{GE}



C_M – I_{CP}



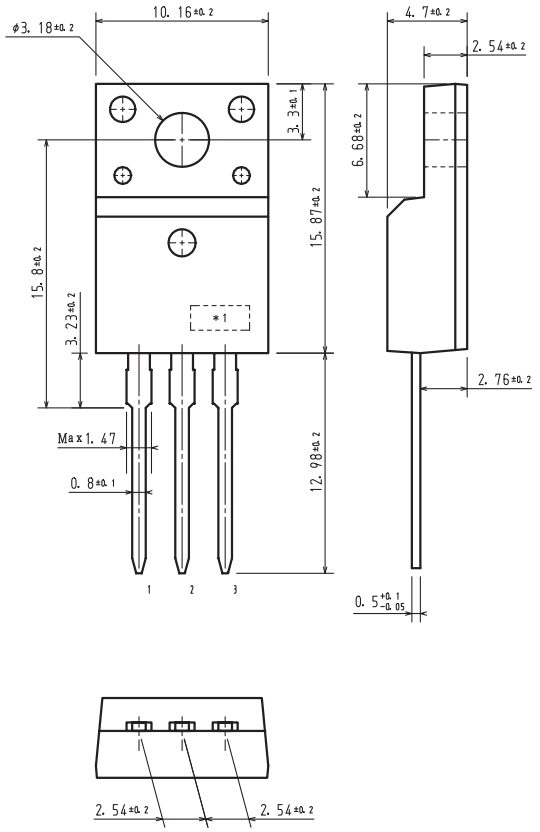
P_D – Tc



Outline Drawing

TIG056BF-1E

Mass (g)	Unit
1.8 * For reference	mm



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

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TIG056BF-1E