



# TIG056BF — N-Channel IGBT High Power High Speed Switching Applications

## Features

- Low-saturation voltage
- Ultrahigh speed switching
- Enhancement type

## Specifications

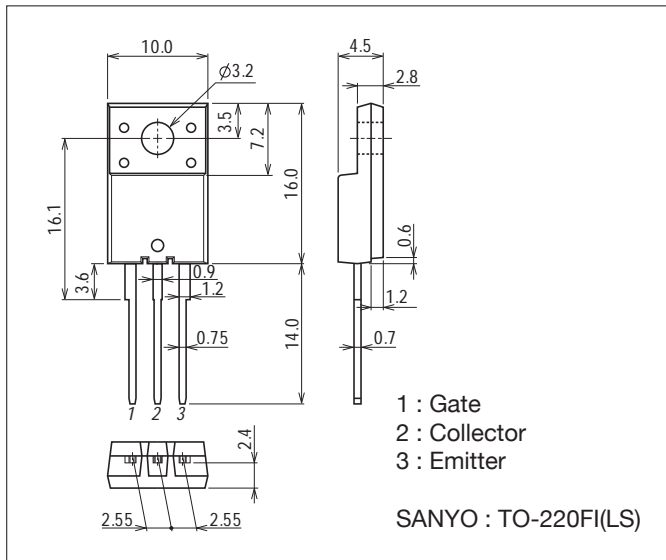
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage	V <sub>CES</sub>		400	V
Gate-to-Emitter Voltage (DC)	V <sub>GES</sub>		±20	V
Gate-to-Emitter Voltage (Pulse)	V <sub>GESP</sub>	PW≤1ms	±30	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>C</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

## Package Dimensions

unit : mm (typ)

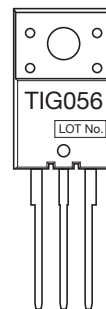
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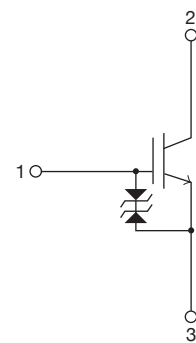
## Product & Package Information

- Package : TO-220FI(LS)
- JEITA, JEDEC : SC-67, SOT-186A, TO-220F
- Minimum Packing Quantity : 100 pcs./bag, 50 pcs./magazine

## Marking



## Electrical Connection

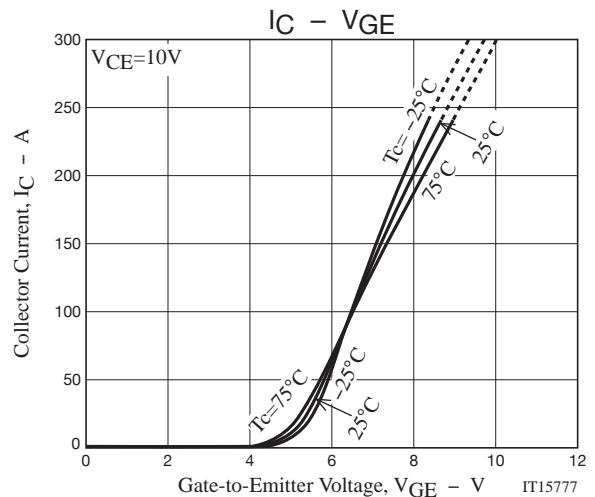
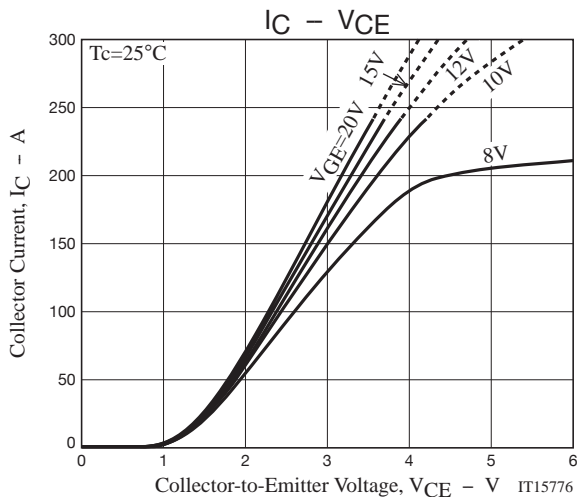
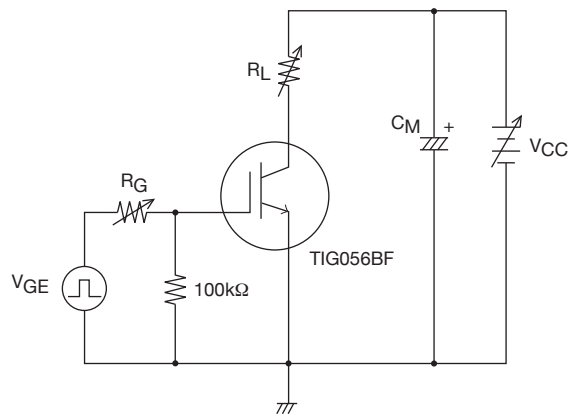


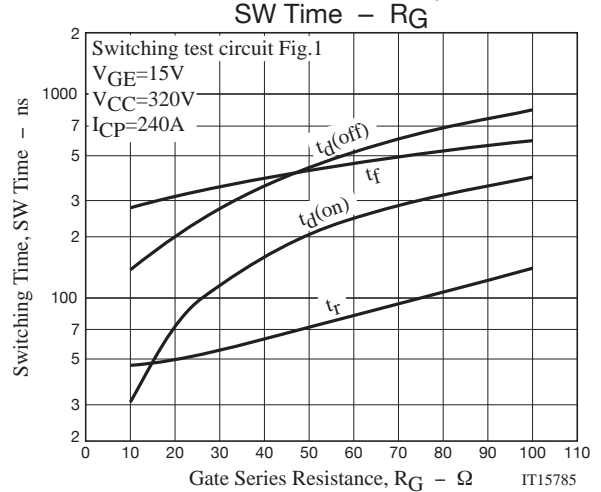
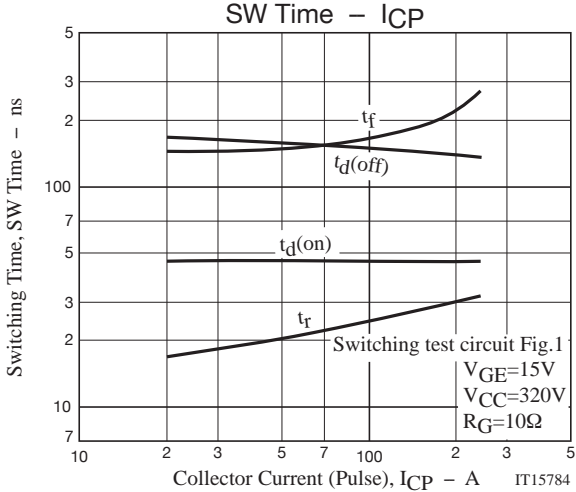
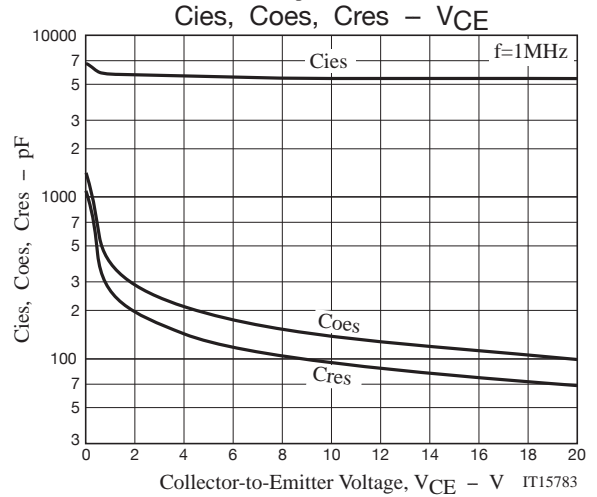
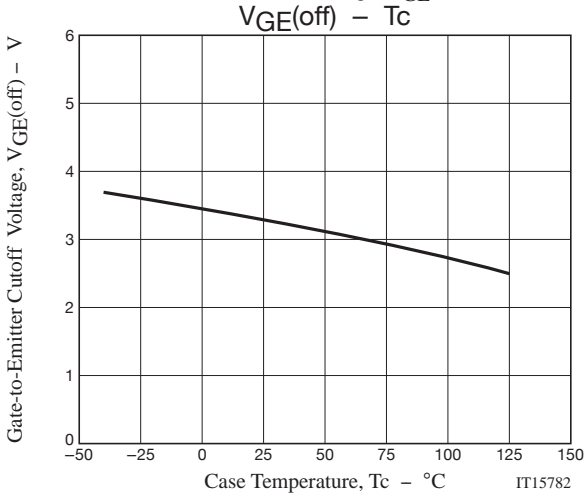
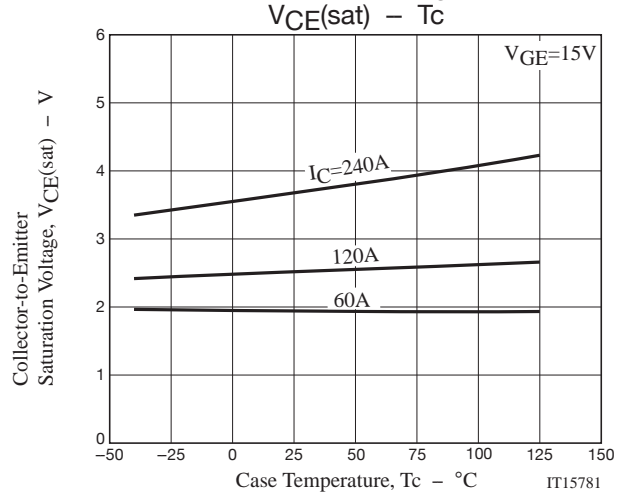
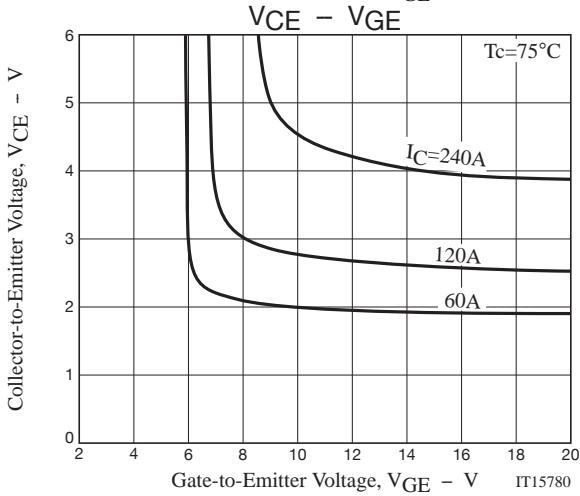
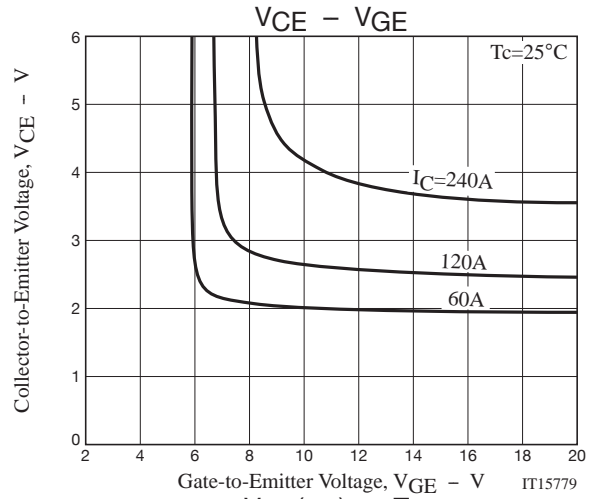
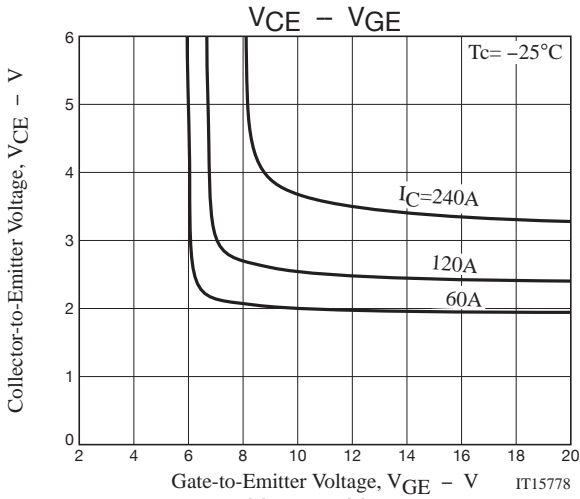
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## Electrical Characteristics at $T_a=25^\circ\text{C}$

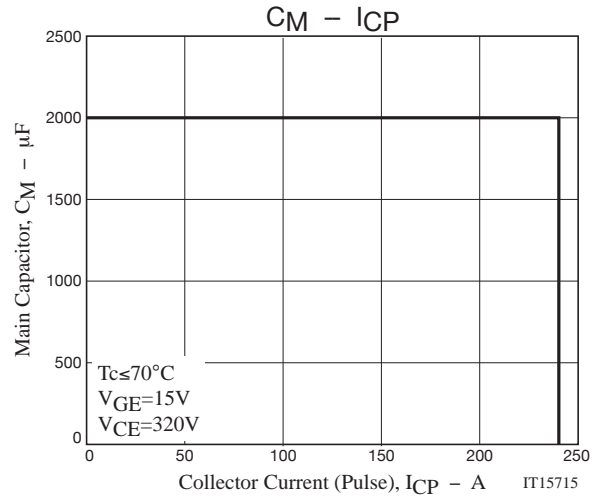
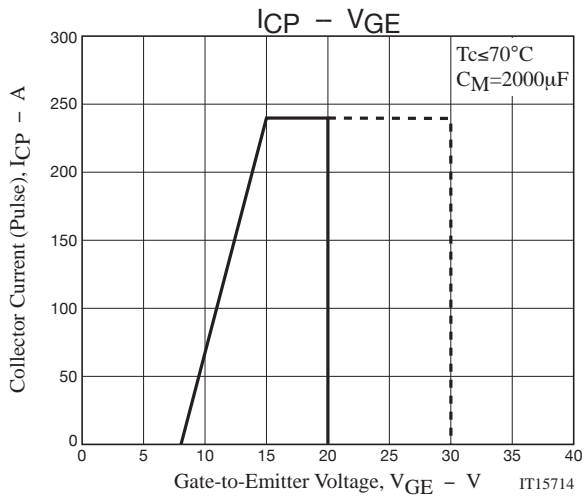
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=2\text{mA}, V_{GE}=0\text{V}$	400			V
Collector-to-Emitter Cutoff Current	$I_{CES}$	$V_{CE}=320\text{V}, V_{GE}=0\text{V}$			100	$\mu\text{A}$
Gate-to-Emitter Leakage Current	$I_{GES}$	$V_{GE}=\pm 30\text{V}, V_{CE}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Gate-to-Emitter Threshold Voltage	$V_{GE(off)}$	$V_{CE}=10\text{V}, I_C=1\text{mA}$	2.5		5.0	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=240\text{A}, V_{GE}=15\text{V}$		3.6	5.0	V
Input Capacitance	$C_{ies}$	$V_{CE}=20\text{V}, f=1\text{MHz}$		5500		pF
Output Capacitance	$C_{oes}$	$V_{CE}=20\text{V}, f=1\text{MHz}$		100		pF
Reverse Transfer Capacitance	$C_{res}$	$V_{CE}=20\text{V}, f=1\text{MHz}$		70		pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{CE}=320\text{V}, I_C=240\text{A}, V_{GE}=15\text{V}, R_G=10\Omega$		46		ns
Rise Time	$t_r$	$V_{CE}=320\text{V}, I_C=240\text{A}, V_{GE}=15\text{V}, R_G=10\Omega$		32		ns
Turn-OFF Delay Time	$t_{d(off)}$	$V_{CE}=320\text{V}, I_C=240\text{A}, V_{GE}=15\text{V}, R_G=10\Omega$		140		ns
Fall Time	$t_f$	$V_{CE}=320\text{V}, I_C=240\text{A}, V_{GE}=15\text{V}, R_G=10\Omega$		270		ns

Fig1 Large Current R Load Switching Circuit





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

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