

NGTB10N60FG



N-Channel IGBT

600V, 10A, V_{CE(sat)};1.5V, TO-220F-3FS

ON Semiconductor®

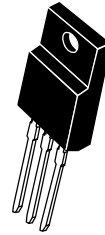
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主要特长

- IGBT V_{CE(sat)}=1.5V typ. (I_C=10A, V_{GE}=15V)
- IGBT I_C=20A (T_c=25°C)
- 适应全绝缘型封装
- 5μs抗短路能力
- Diode V_F=1.3V typ. (I_F=10A)
- Diode t_{rr}=70ns typ.
- 增强型 (Enhancement type)

应用

- 白物家电的功率因数校正
- 通用变频器 (General purpose inverter)



TO-220F-3FS

规格

绝对最大额定值 / T_a = 25°C (除非特殊指定)

参数	记号	条件	值	单位	
Collector-Emitter 电压	V _{CES}		600	V	
Gate-Emitter 电压	V _{GES}		±20	V	
Collector 电流 (DC)	I _C *1	受限于 T _{jmax}	@ T _c =25°C *2	20	A
			@ T _c =100°C *2	10	A
Collector 电流 (脉冲)	I _{CP}	受限于 T _{jmax} 的脉宽	72	A	
二极管平均输出电流(Diode Average output current)	I _O		10	A	
允许功耗(Allowable Power Dissipation)	P _D	T _c =25°C (我司理想的散热条件) *2	40	W	
结温(Junction Temperature)	T _j		150	°C	
储存温度(Storage Temperature)	T _{stg}		- 55 to +150	°C	

注: *1 Collector 电流由下式计算:

$$I_C(T_c) = \frac{T_{jmax} - T_c}{R_{th(j-c)} \times V_{CE(sat)}} I_C(T_c)$$

*2 我司的条件为背面散热。方法为:器件的背面涂上硅脂,然后将该器件贴在 铝制的水冷散热器上。

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.

电气特性 / T_a = 25°C (除非特殊指定)

参数	记号	条件	值			单位
			min	typ	max	
集电极-发射极击穿电压 (Collector to Emitter Breakdown Voltage)	V(BR)CES	I _C =500μA, V _{GE} =0V	600			V
集电极-发射极截止电流 (Collector to Emitter Cutoff Current)	I _{CES}	V _{CE} =600V, V _{GE} =0V	T _c =25°C		10	μA
			T _c =125°C		1	mA
栅极-发射极漏电流 (Gate to Emitter Leakage Current)	I _{GES}	V _{GE} =±20V, V _{CE} =0V			±100	nA
栅极-发射极阈值电压 (Gate to Emitter threshold voltage)	V _{GE(off)}	V _{CE} =20V, I _C =250μA	4.5		6.5	V
集电极-发射极饱和电压 (Collector to Emitter Saturated Voltage)	V _{CE(sat)}	V _{GE} =15V, I _C =10A	T _c =25°C	1.5	1.7	V
			T _c =125°C	1.7		V
正向二极管电压(Forward Diode Voltage)	V _F	I _F =10A		1.3		V
输入电容(Input Capacitance)	C _{ies}	V _{CE} =20V, f=1MHz		1440		pF
输出电容(Output Capacitance)	C _{oes}			60		pF
反向传输电容(Reverse Transfer Capacitance)	C _{res}			30		pF

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ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

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参数	记号	条件	值			单位	
			min	typ	max		
开启延迟时间(Turn-ON Delay Time)	$t_{d(on)}$	$V_{CC}=300V, I_C=10A$ $R_G=30\Omega, L=200\mu H$ $V_{GE}=0V/15V$ $V_{clamp}=400V$ See Fig.1, See Fig.2		40		ns	
上升时间(Rise Time)	t_r			23		ns	
开启时间(Turn-ON Time)	t_{on}			110		ns	
关断延迟时间(Turn-OFF Delay Time)	$t_{d(off)}$			145		ns	
下降时间(Fall Time)	t_f			90		ns	
关断时间(Turn-OFF Time)	t_{off}			240		ns	
总栅极电荷(Total Gate Charge)	Q_g		$V_{CE} = 300V, V_{GE}=15V, I_C=10A$		55		nC
栅极-发射极电荷(Gate to Emitter charge)	Q_{ge}				20		nC
栅极-集电极米勒电荷 (Gate to Collector "Miller" Charge)	Q_{gc}			10		nC	
二极管反向恢复时间 (Diode Reverse Recovery Time)	t_{rr}	$I_F=10A, di/dt=100A/\mu s, V_{CC}=50V$, See Fig.3		70		ns	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

热特性 / $T_a = 25^\circ C$ (除非特殊指定)

参数	记号	条件	值	单位
热阻 IGBT(结到外壳) Thermal Resistance IGBT (junction- Case)	$R_{th(j-c)}$ (IGBT)	$T_c=25^\circ C$ (我司的理想散热条件)*2	3.09	$^\circ C/W$
热阻二极管(结到外壳) Thermal Resistance Diode (junction- Case)	$R_{th(j-c)}$ (Diode)	$T_c=25^\circ C$ (我司的理想散热条件)*2	4	$^\circ C/W$
热阻(结到环境) Thermal Resistance (junction- ambient)	$R_{th(j-a)}$		59.5	$^\circ C/W$

图 1 : 开关时间测试电路

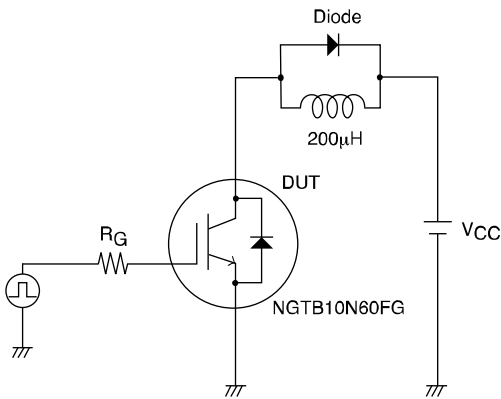
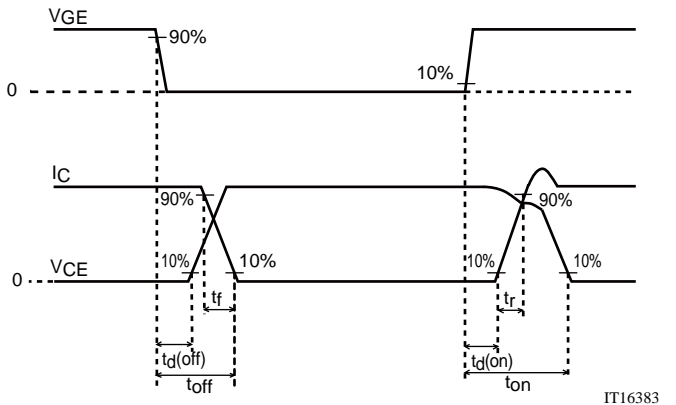
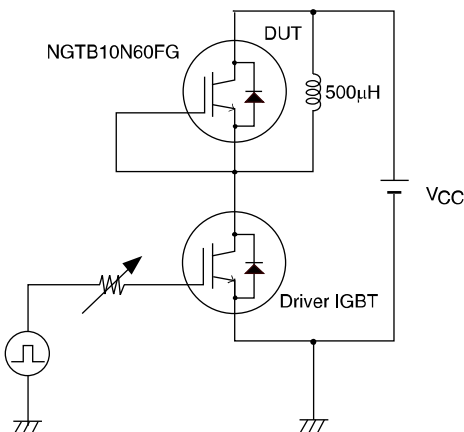


图 2 : 时间图

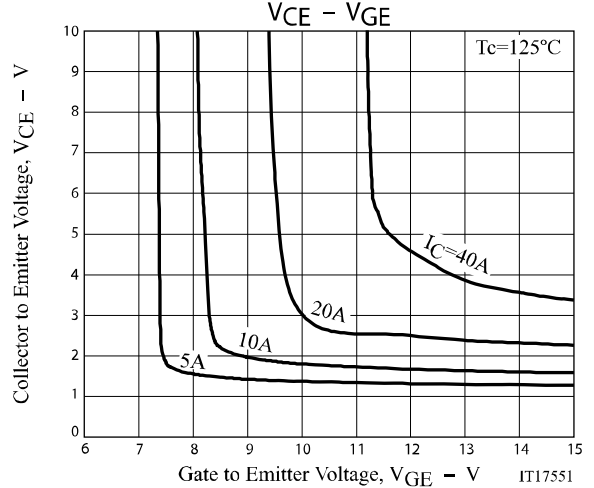
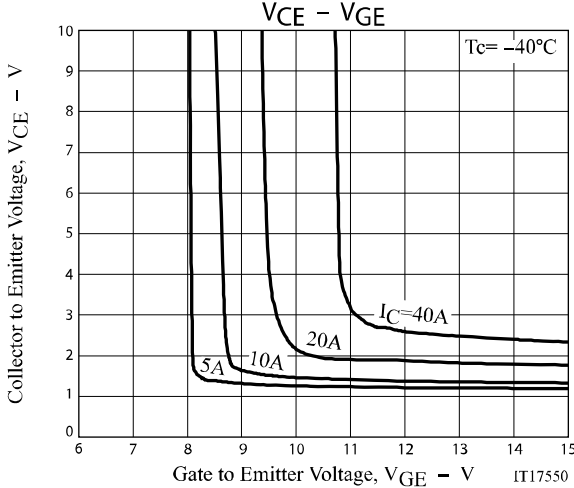
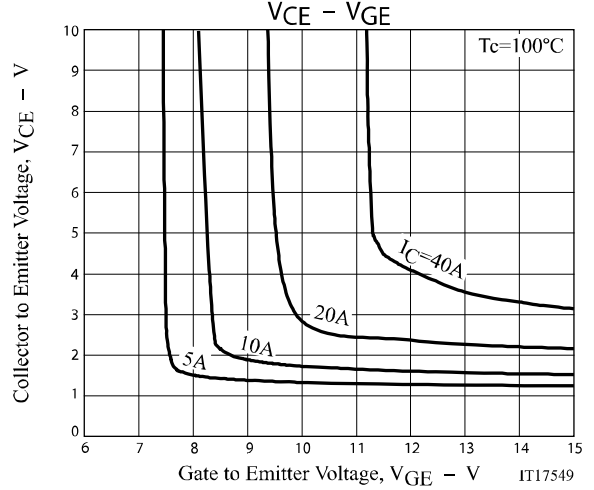
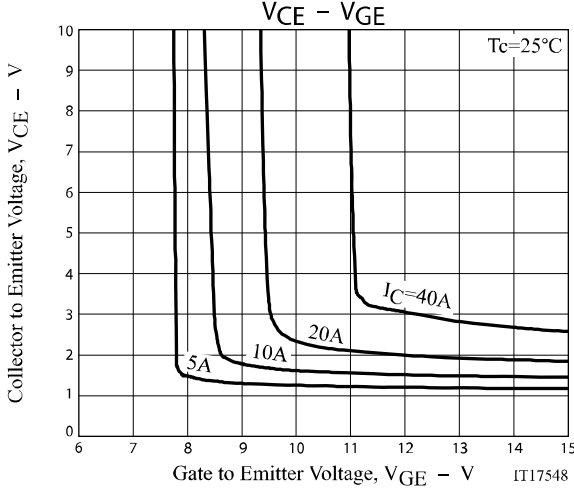
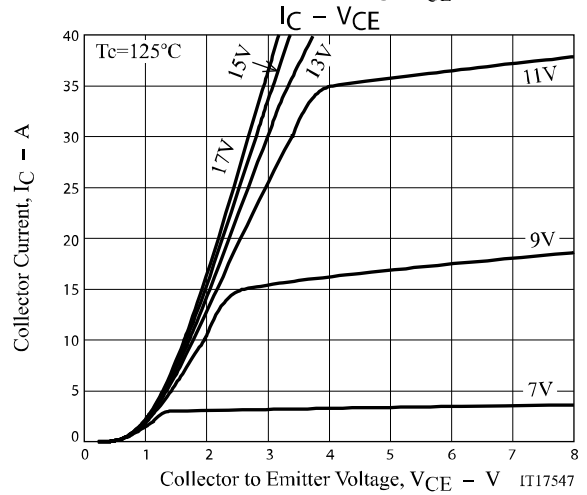
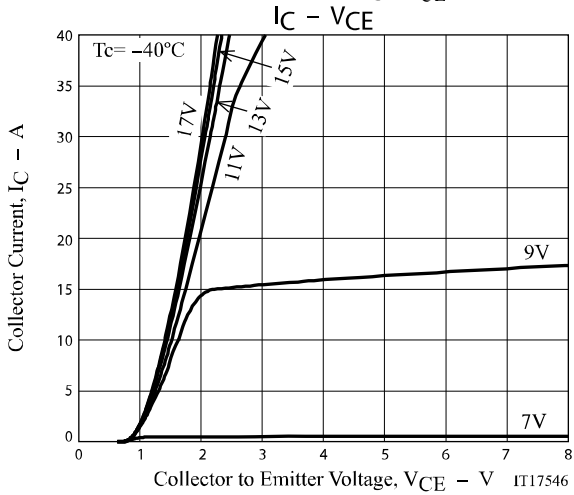
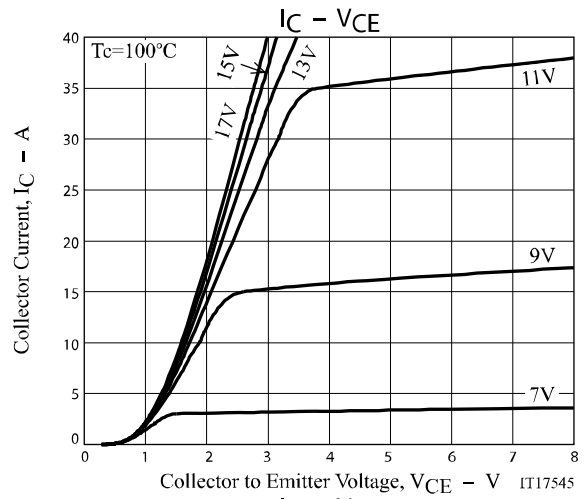
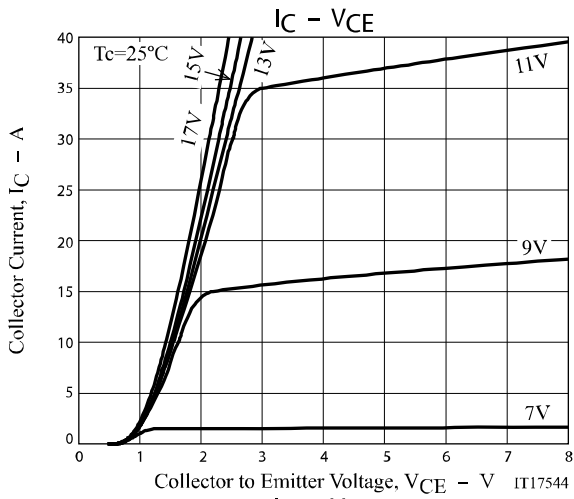


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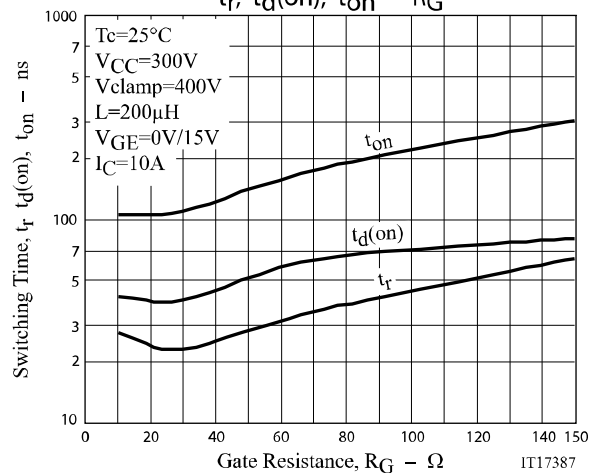
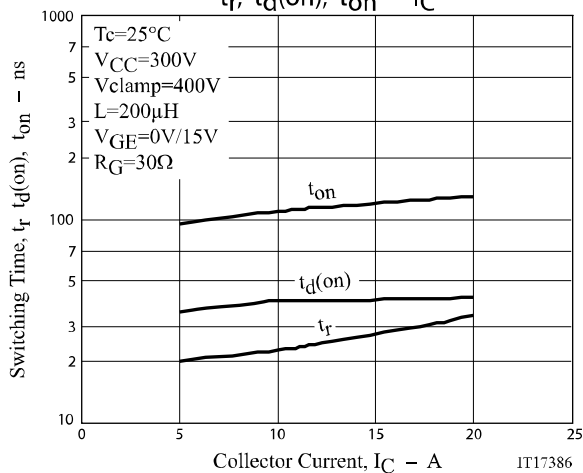
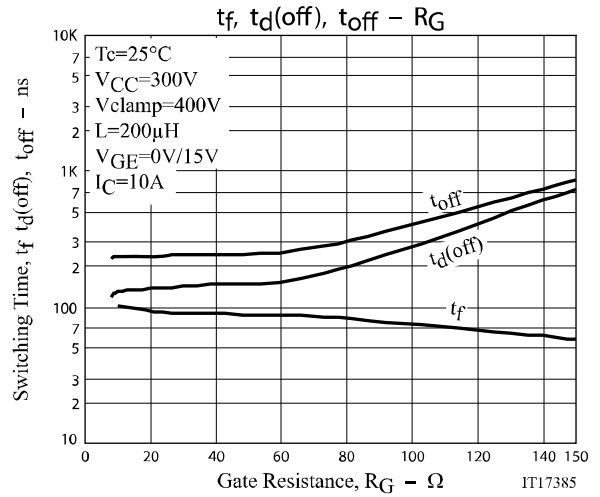
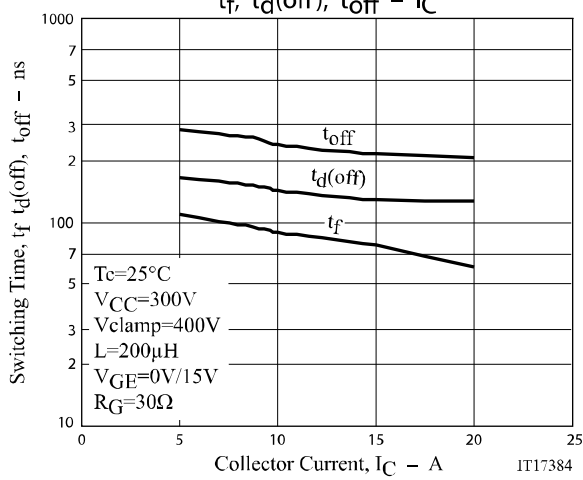
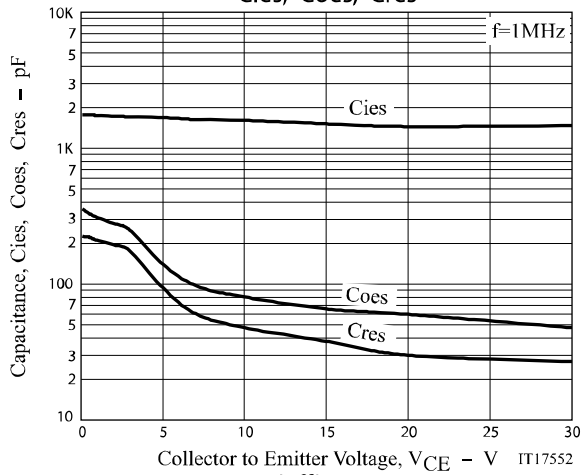
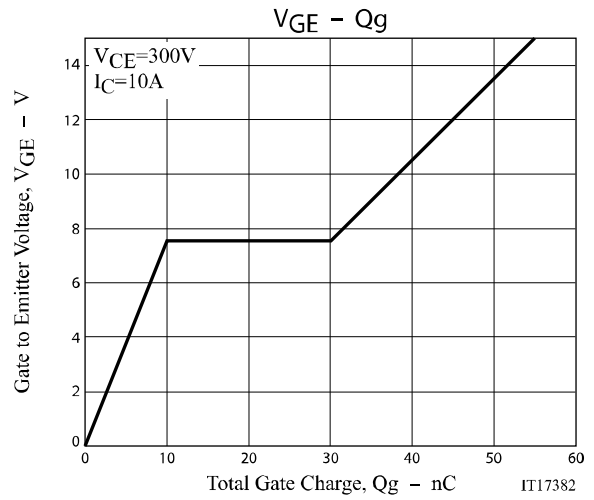
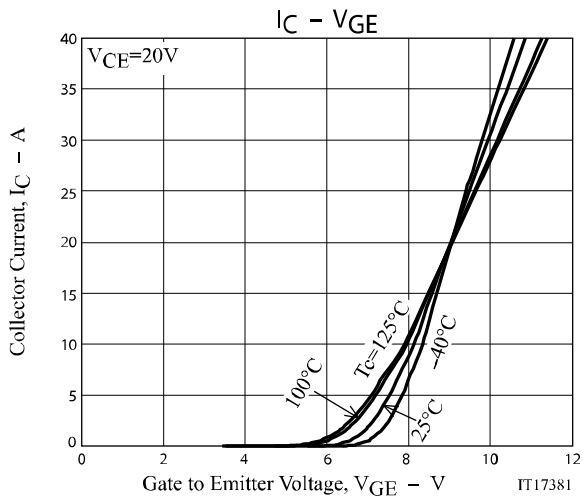
图 3 : 反向恢复时间测试电路



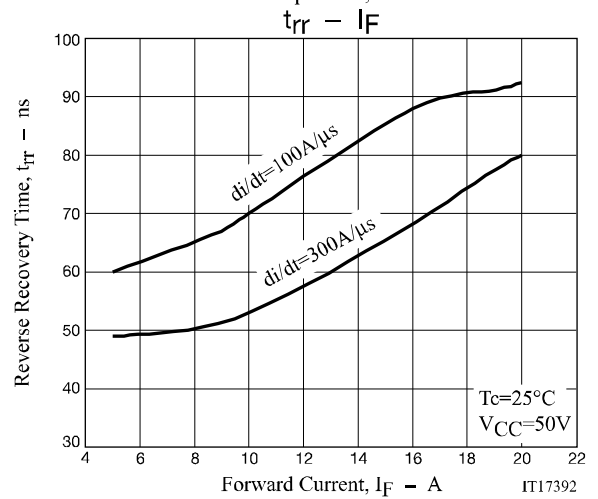
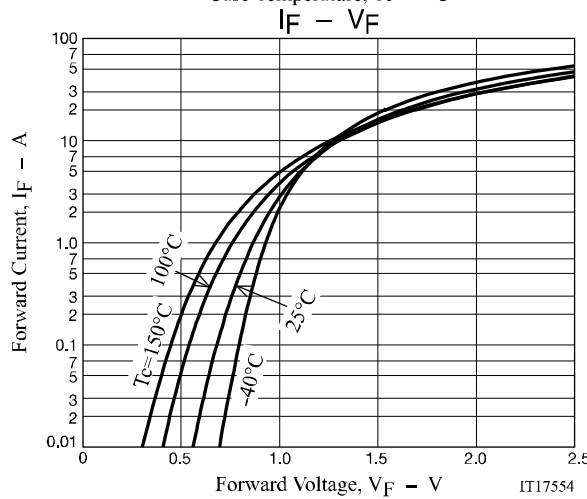
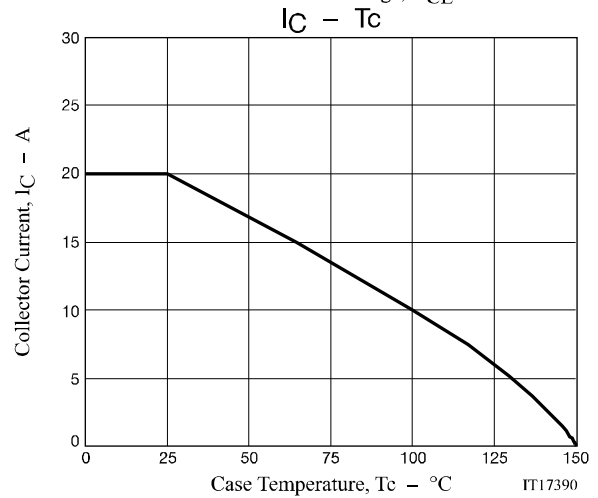
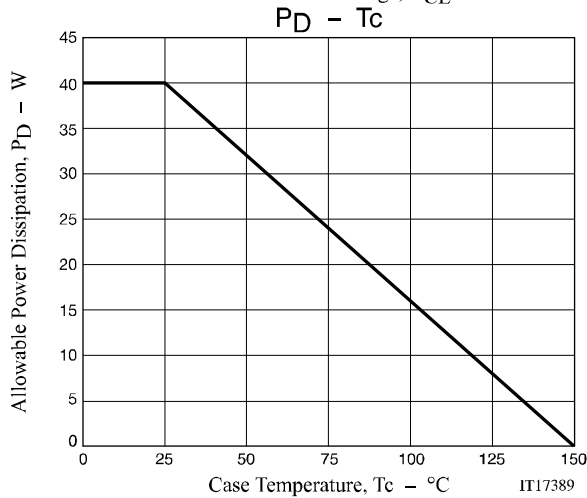
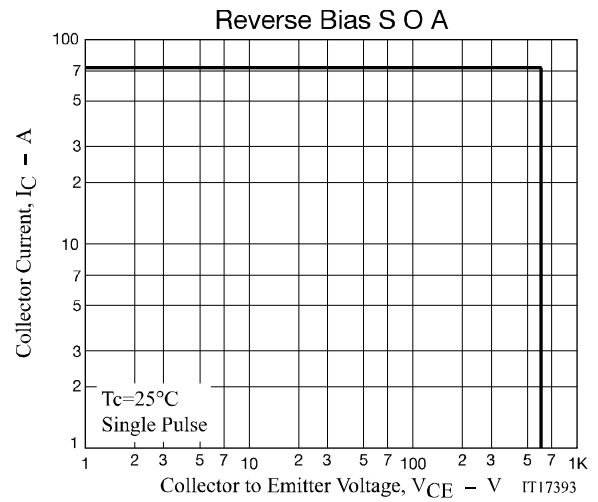
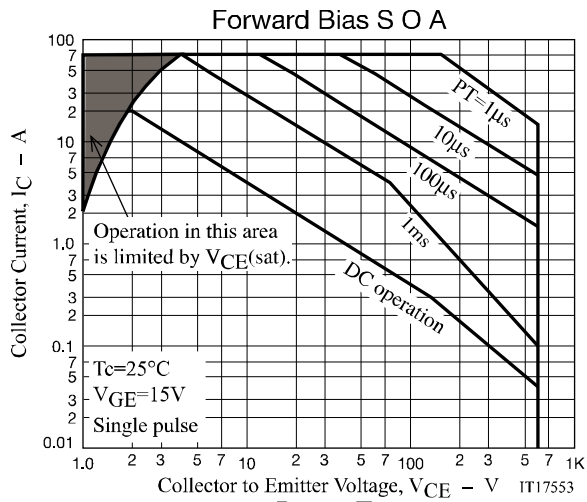
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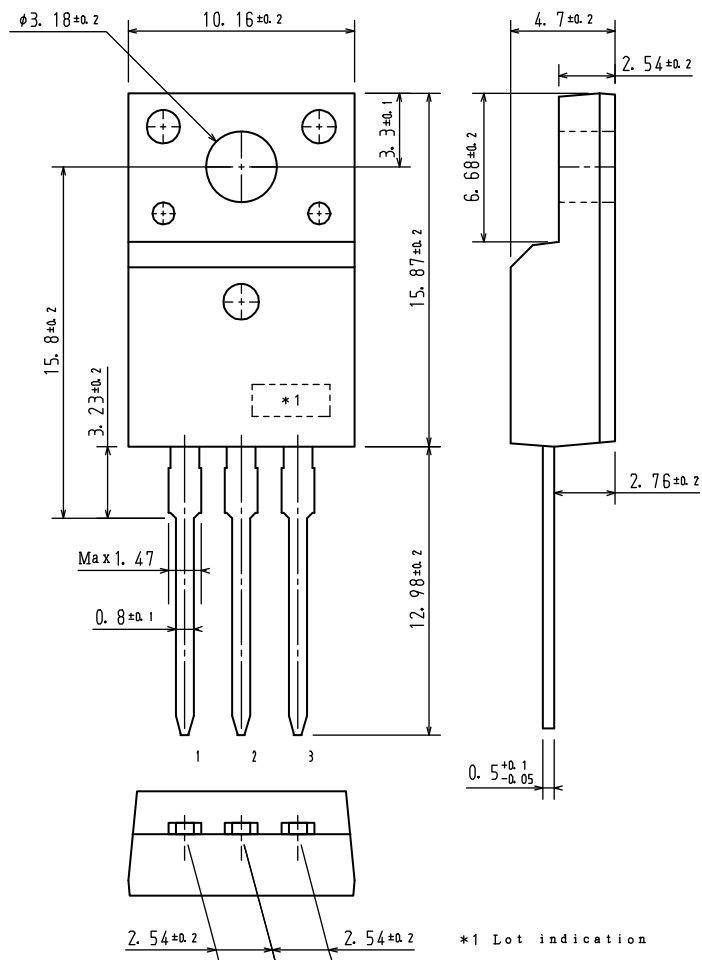
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封装尺寸

单位 : mm

TO-220F-3FS
CASE 221AM
ISSUE O

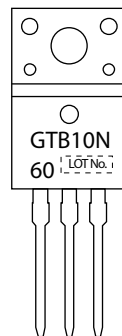
- 1: Gate
- 2: Collector
- 3: Emitter



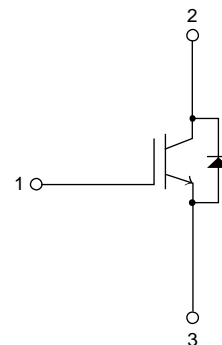
订单与封装情报

Device	Package	Shipping	note
NGTB10N60FG	TO-220F-3FS SC-67	50 pcs. / tube	Pb-Free

印刷图



电气连接



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