/ Descriptions

TO-220FL

Insulated-Gate Bipolar Transistor in a TO-220FL Plastic Package.

/ Features

650V/20A $V_{CE(SAT)}$= 1.45V(typ.) @I_C= 20A

Low gate charge

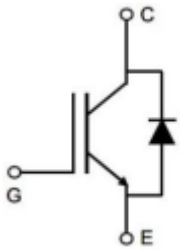
Trench FS Trench FS Technology

RoHS RoHS product

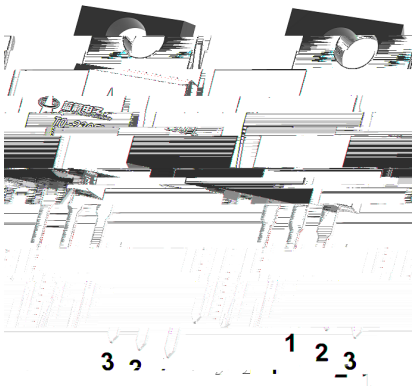
/ Applications

General purpose inverters,UPS.

/ Equivalent Circuit



/ Pinning

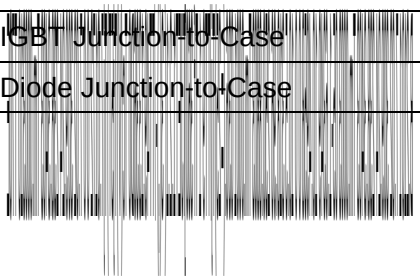


PIN1 G PIN 2 C PIN 3 E

/ Marking

See Marking Instructions.

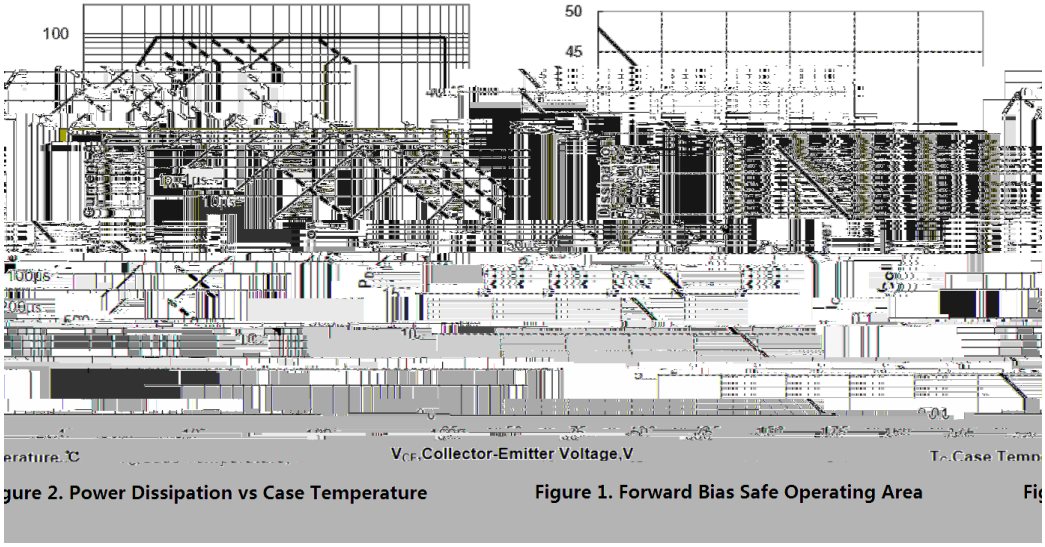
Parameter		Symbol	Rating	Unit
Collector-Emitter Voltage		V_{CES}	650	V
Continuous Collector Current	T_C=+25	I_C	40	A
	T_C=+100		20	A
Pulsed Collector Current , Limited by T_{Jmax}		I_{CM}	80	A
Continuous Diode Forward Current	T_C=+25	I_F	40	A
	T_C=+100		20	A
Surge non repetitive forward current tp= 8.3 ms sinusoidal		I_{FSM}	120	A
Gate-Emitter Voltage		V_{GE}	± 30	V
Power Dissipation	T_C=+25	P_D	48	W
Operating and Storage Temperature Range		T_{STG}	-55 to +175	
Operating Temperature Range		T_J	-55 to +175	
Maximum Junction-to-Ambient		$R_{\theta JA}$	78	/W
Maximum IGBT Junction-to-Case		$R_{\theta JC}$	3.10	/W
Maximum Diode Junction-to-Case		$R_{\theta JC}$	4.12	/W



Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	I_C=250uA, V_{GE}=0V	650			V
Zero Gate Voltage Collector current	I_{CES}	V_{CE}=650V, V_{GE}=0V 194.00=2558 0 Tc T_J=25			35	uA

Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V_{GE}=15V, I_C=20A	T_J=25		1.45	1.82	V
			T_J=125		1.68		
			T_J=175		1.93		
Diode Forward Voltage	V_F	V_{GE}=0V, I_F=20A	T_J=25		1.40	1.84	V
			T_J=125		1.24		
			T_J=175		1.14		
Input Capacitance	C_{ies}	V_{GE}=0V, V_{CE}=25V, f=1MHz,T_J=25			1420		pF
Output Capacitance	C_{oes}				72		pF

/ Electrical Characteristic Curve



gure 2. Power Dissipation vs Case Temperature

Figure 1. Forward Bias Safe Operating Area

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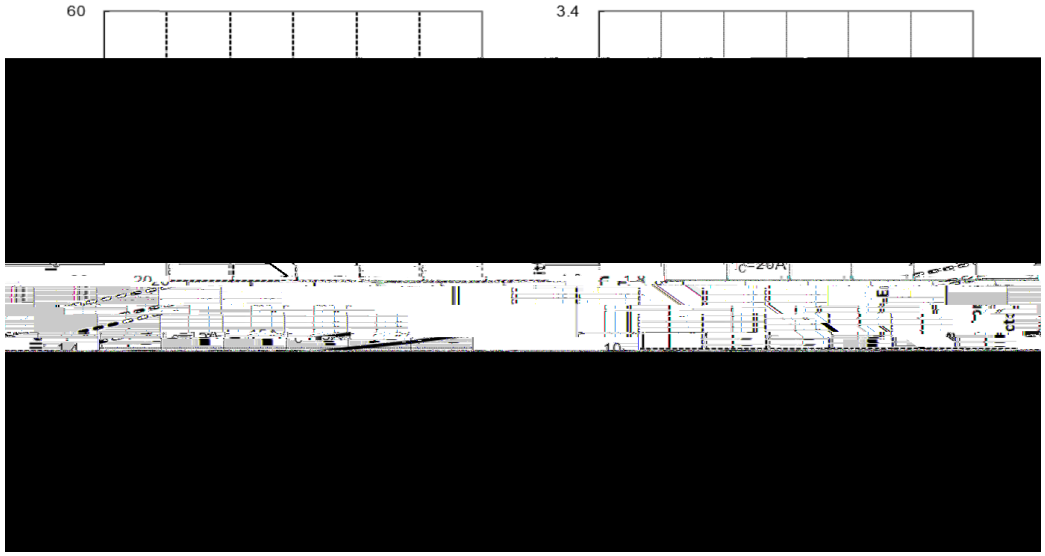
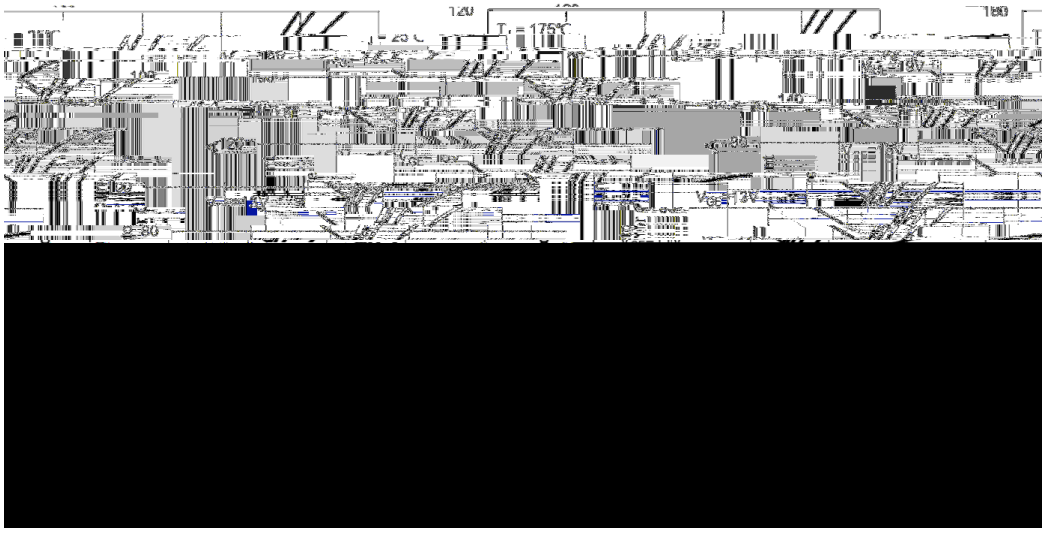
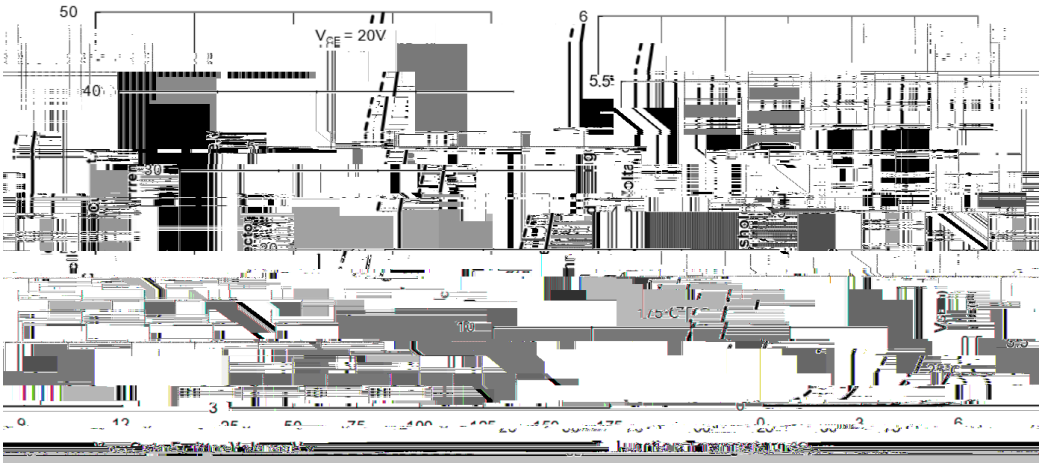




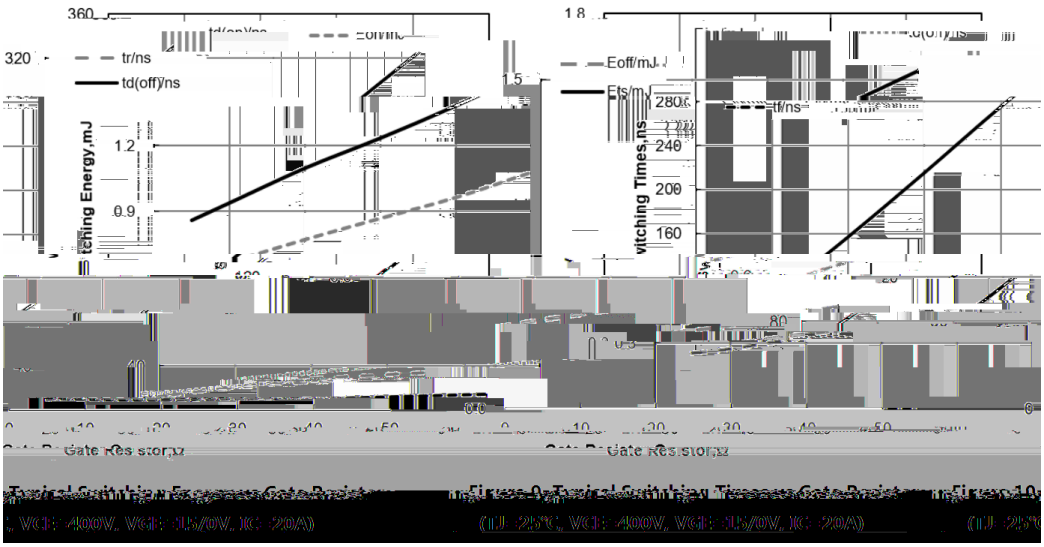
/ Electrical Characteristic Curve



8. Typical Gate-Emitter Threshold

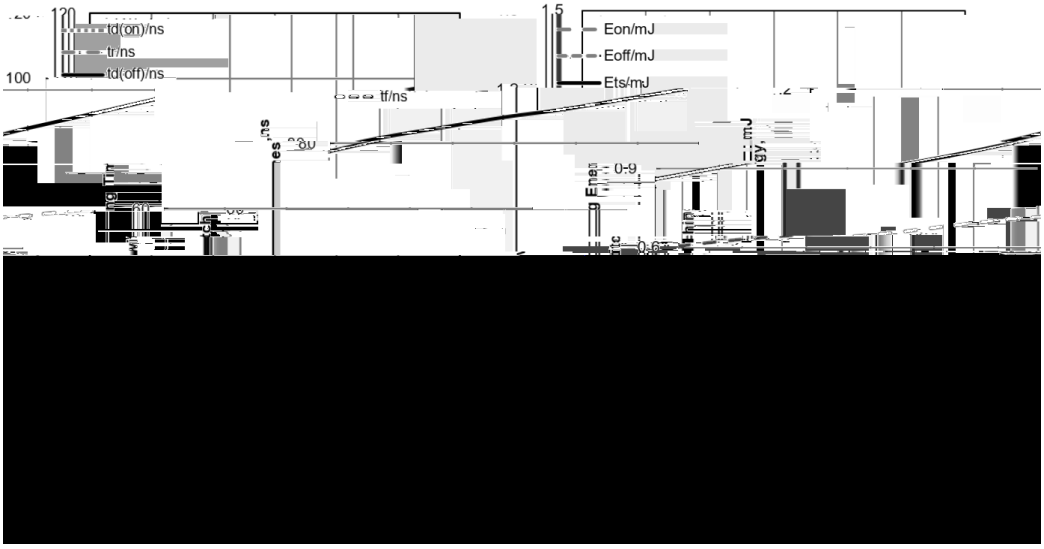
Figure 7. Typical Transfer Characteristics

Figure



Gate Resistor

Gate Resistor



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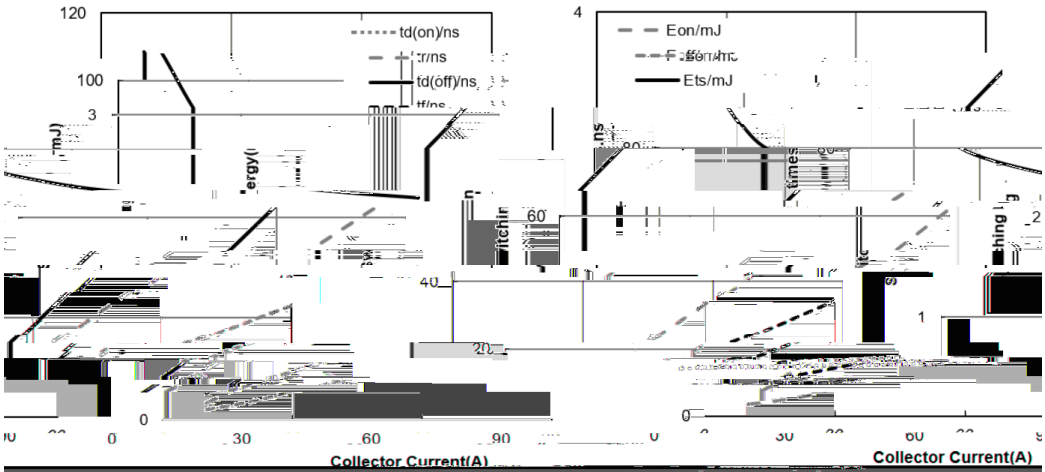
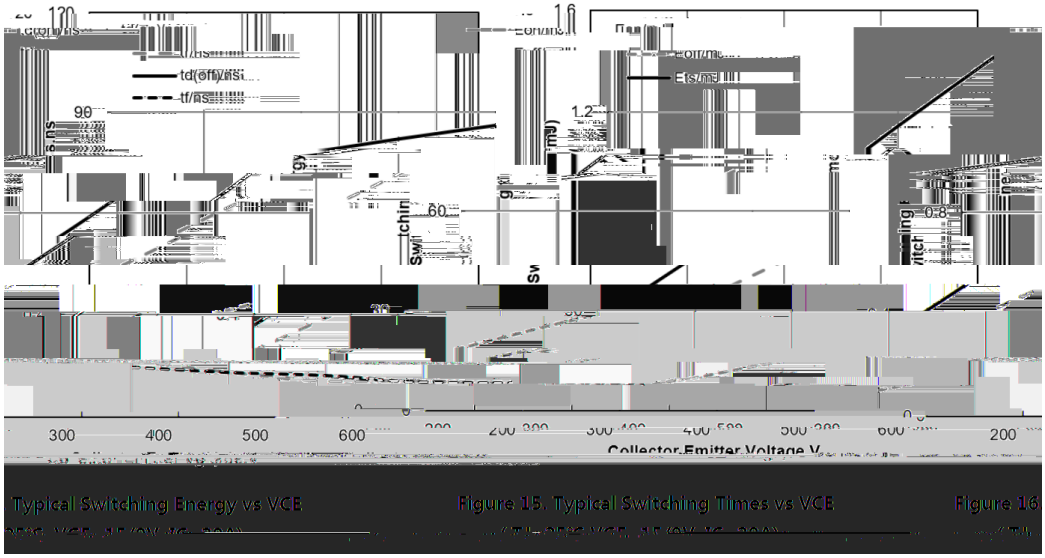


Figure 13. Typical Switching Times vs Collector Current (TJ=25°C, VCE=400V, VGE=15/0V)

Figure 14. Typical Switching Energy vs Collector Current (TJ=25°C, VCE=400V, VGE=15/0V)



Typical Switching Energy vs VCE

Figure 15. Typical Switching Times vs VCE

Figure 16

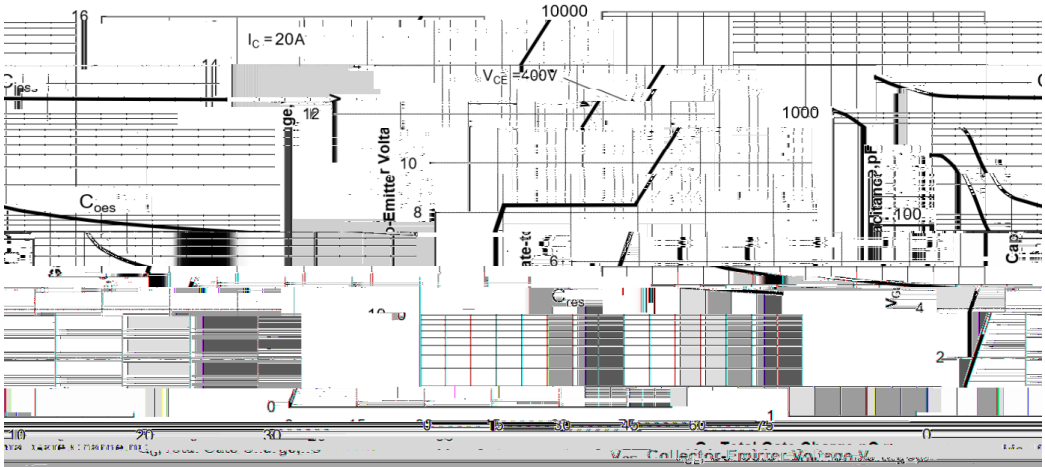


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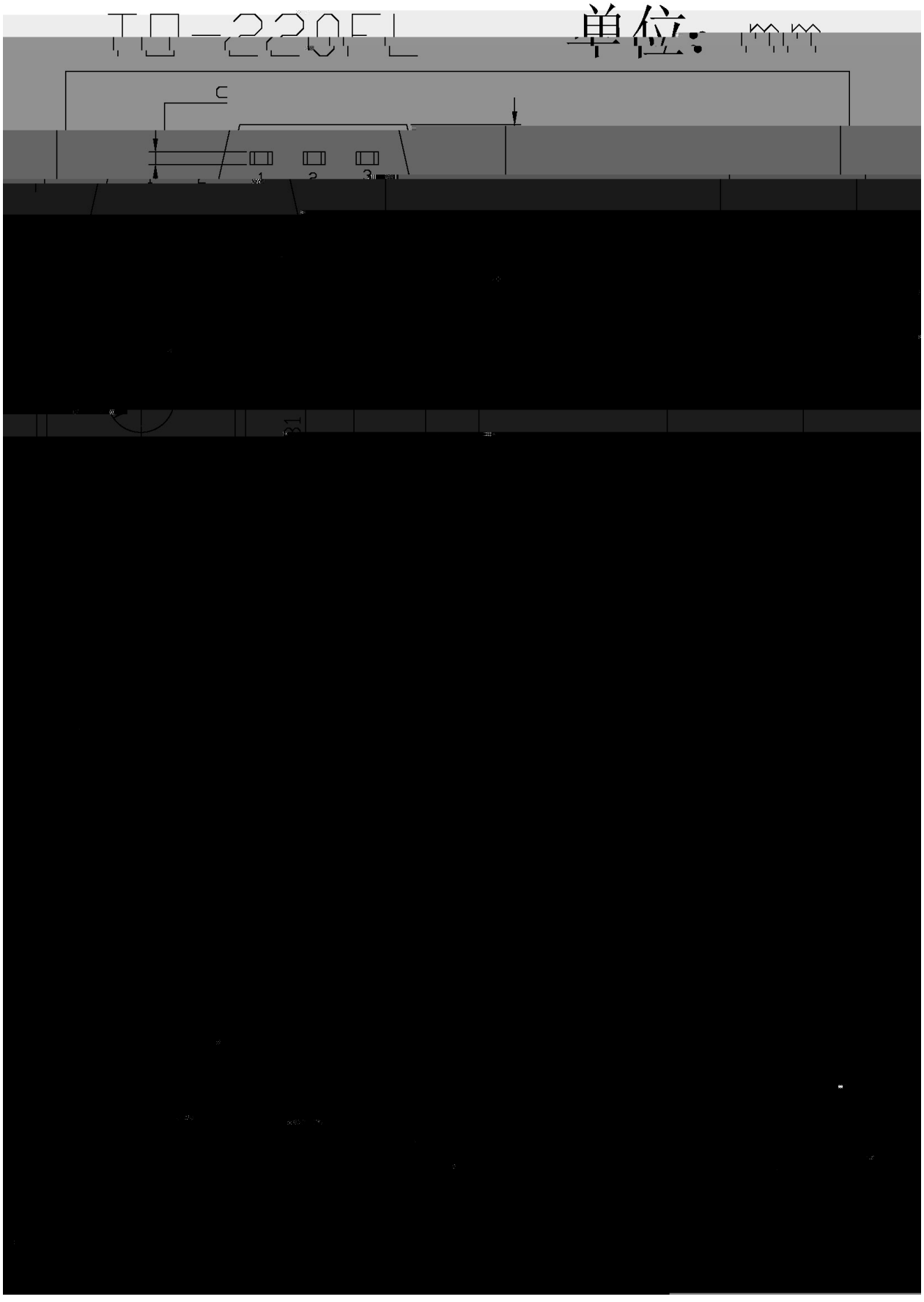
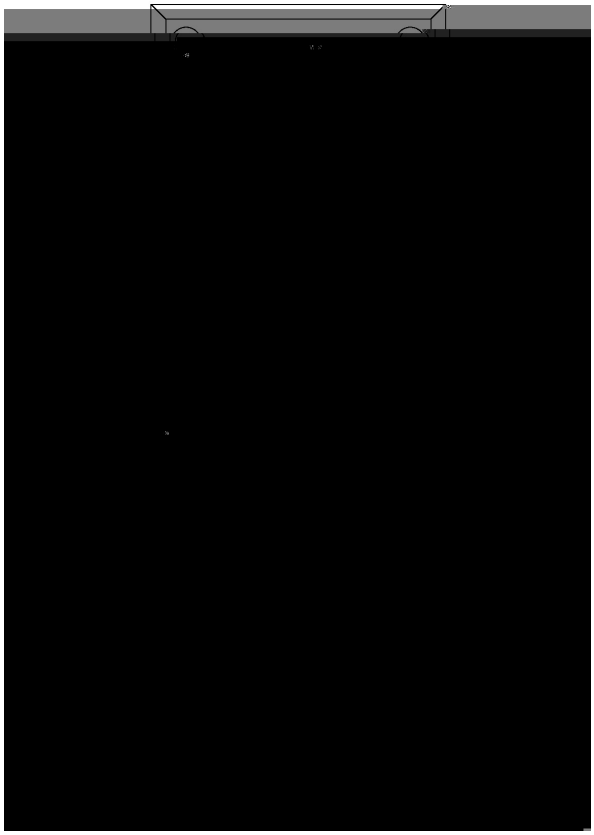
Figure 17. Typical Gate Charge

Figure 18. Typical Capaci
CollectorEmitter Volt

/ Package Dimensions



/ Marking Instructions