

Product Summary

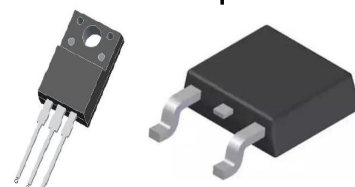
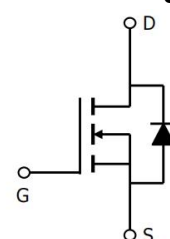
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	240mΩ@10V	14A

Feature

- Super-Junction MOSFET
- High Ruggedness
- Low $R_{DS(ON)}$
- 100% Avalanche Tested
- Improved dv/dt Capability

Application

- PFC/LLC
- PC Power
- LED Lighting

PIN Description

TO-220F
TO-252-2L
Schematic diagram

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPJE65R280TF	TO-252-2L	J65R280T	Tape&Reel	NA	NA	2500PCS
GPJE65R280TC	TO-220F	J65R280T	Tape&Reel	NA	NA	50PCS

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V _{DS}	650	V
Gate - Source Voltage		V _{GS}	±30	V
Continuous Drain Current(Note1)	T _C = 25℃	I _D	14	A
	T _C = 100℃	I _D	8.8	A
Pulsed Drain Current(Note1)		I _{DM}	56	A
Single Pulsed Avalanche Energy(Note2)		E _{AS}	307	mJ
Power Dissipation TO-220F	T _C = 25℃	P _D	24	W
Power Dissipation TO-252-2L	T _C = 25℃		109	W
MOSFET dv/dt Ruggedness(V _{DS} =0~480V)		dv/dt	50	V/ns
Peak Diode Recovery dv/dt(V _{DS} =0~400V, I _{SD} ≤I _S)		dv/dt	15	V/ns
Thermal Resistance, Junction to Case TO-220F		R _{thjc}	5.2	℃/W
Thermal Resistance, Junction to Case TO-252-2L			1.15	℃/W
Thermal Resistance, Junction to Ambient TO-220F		R _{thja}	62.5	℃/W
Thermal Resistance, Junction to Ambient TO-252-2L			62	℃/W
Junction Temperature		T _J	-55~ +150	℃
Storage Temperature		T _{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	650			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 650V, V _{GS} = 0V, T _J =25°C			1	μA
		V _{DS} = 650V, V _{GS} = 0V, T _J =125°C		1		μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.5		4.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =7A		240	280	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 100V, V _{GS} = 0V, f = 1MHz		920		pF
Output Capacitance	C _{oss}			41		
Reverse Transfer Capacitance	C _{rss}			1		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		3		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =520V, V _{GS} = 10V, I _D = 14A		26		nC
Gate-Source Charge	Q _{gs}			7.2		
Gate-Drain Charge	Q _{gd}			12		
Turn-On Delay Time	t _{d(on)}	V _{DS} =325V, V _{GS} = 10V, I _D =14A,R _G = 24Ω		19		ns
Turn-On Rise Time	t _r			44		
Turn-Off Delay Time	t _{d(off)}			68		
Turn-Off Fall Time	t _f			36		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 14A			1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =14A, dI/dt = 100 A/μs,V _{GS} = 0V, V _R =50V		266		ns
Body Diode Reverse Recovery Charge	Q _{rr}			3.4		uC
Reverse Recovery Of Peak Current	I _{rrm}			26		A

Notes :

1. Drain current is limited by maximum junction temperature.
2. L = 79mH, V_{DD} = 100V, R_G = 25Ω, Starting at T_J = 25°C

Typical Characteristics

图 1. 输出特性

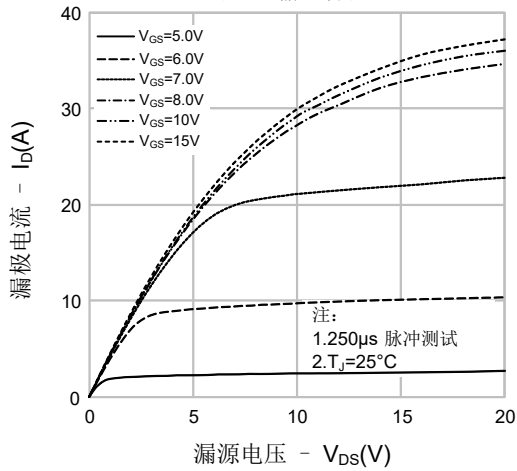


图 2. 输出特性

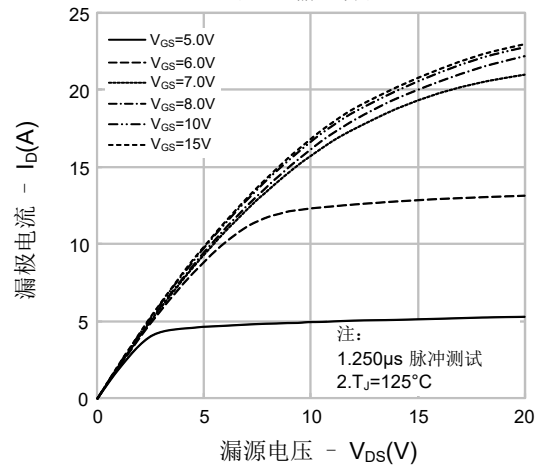


图 3. 传输特性

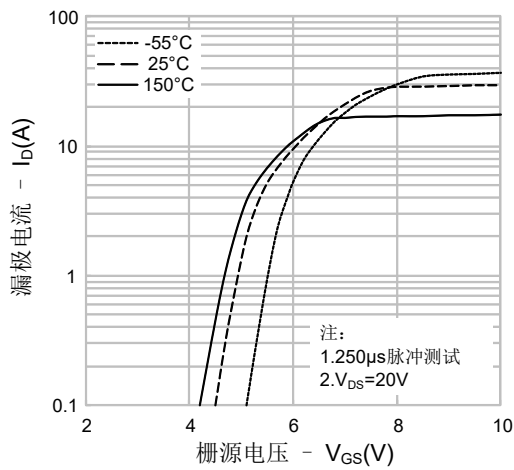


图 4. 导通电阻vs.漏极电流

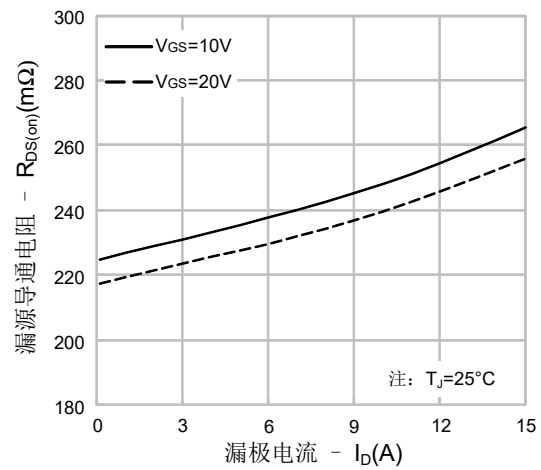


图 5. 导通电阻vs.漏极电流

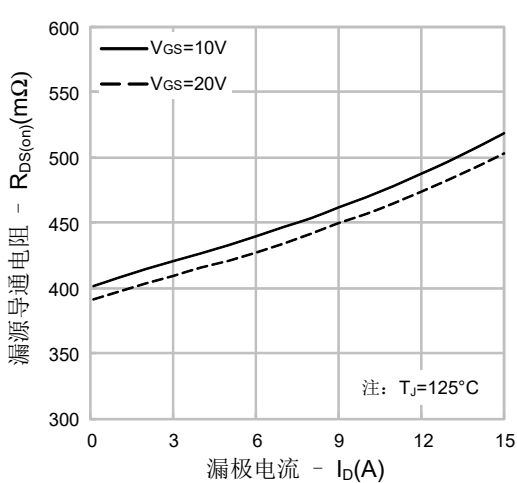


图 6. 导通电阻vs.栅源电压

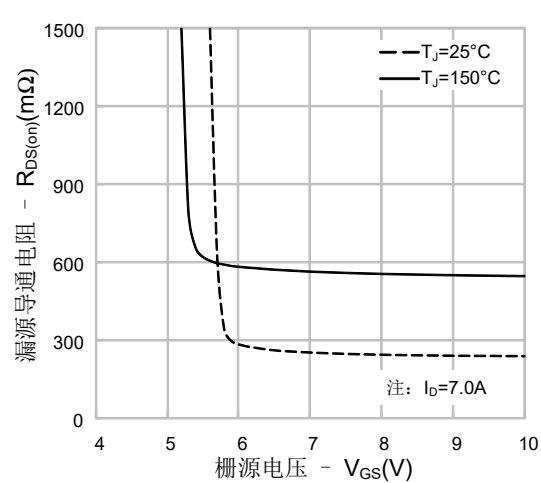


图 7. 开启电压vs.温度特性

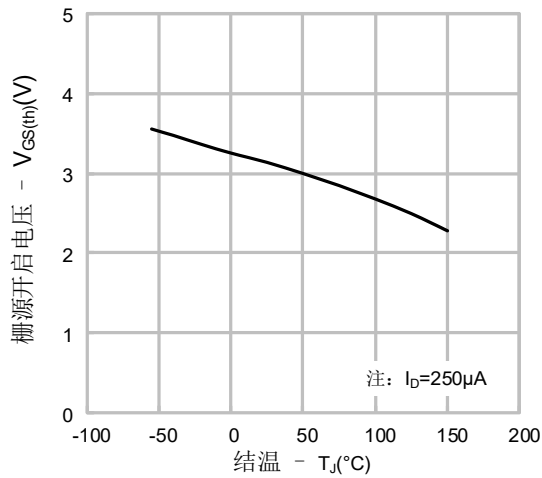


图 8. 体二极管正向压降vs. 源极电流、温度

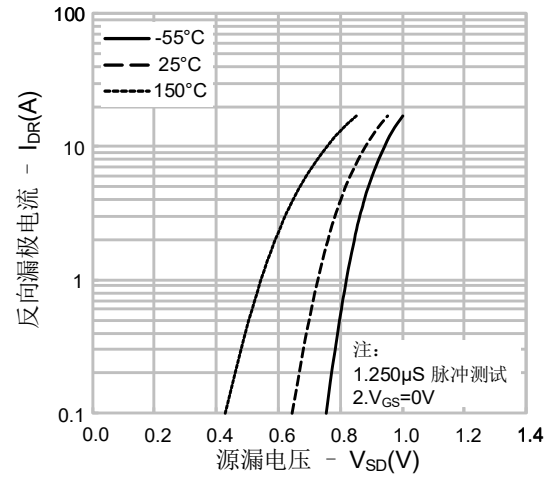


图9. 电容特性

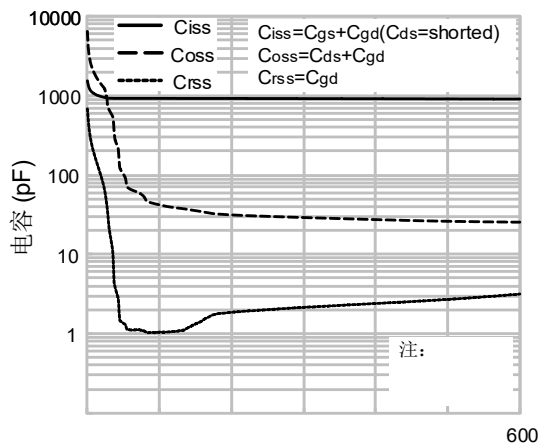


图 10. 电荷量特性

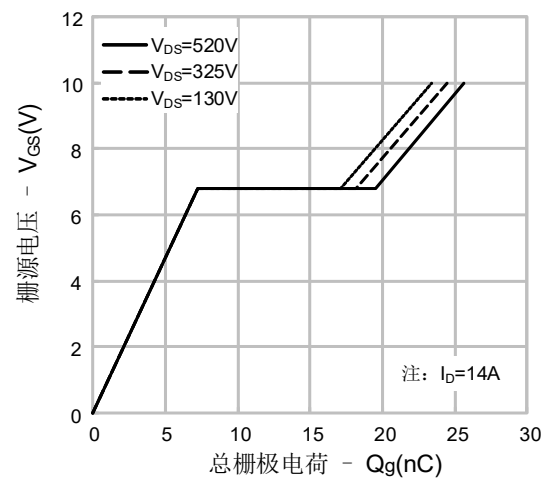


图 11. 击穿电压vs.温度特性

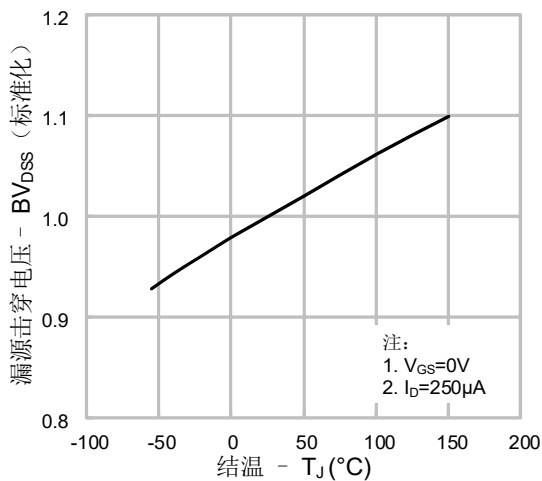


图 12. 导通电阻vs.温度特性

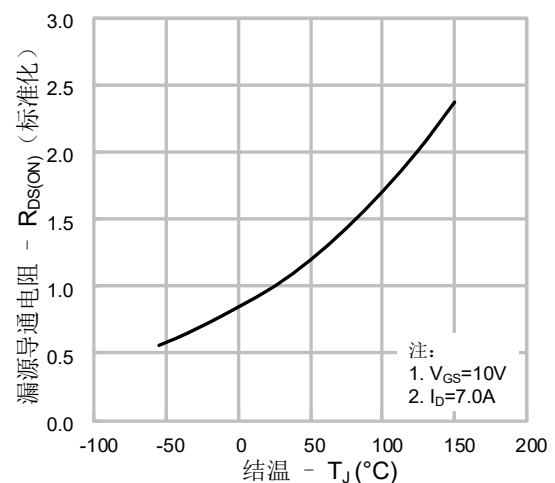


图 13-1. 最大安全工作区域
(GPJE65R280TC)

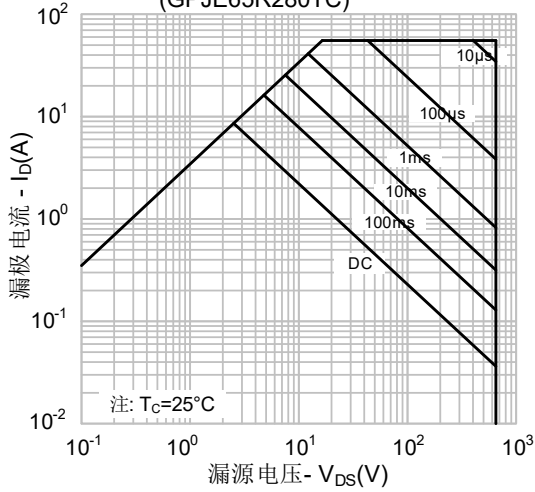


图 13-2. 最大安全工作区域(GPJE65R280TF)

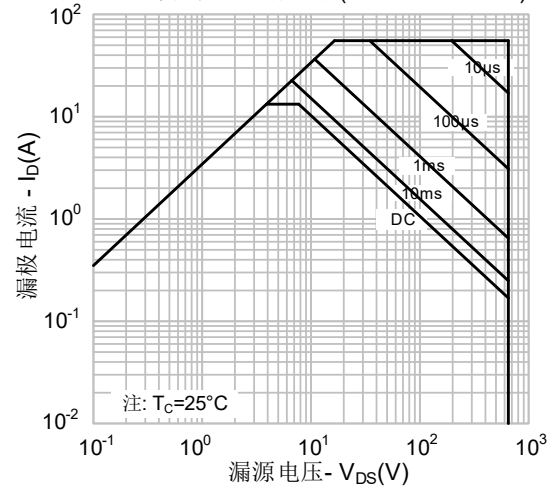


图14-2. 耗散功率vs.温度(GPJE65R280TF)

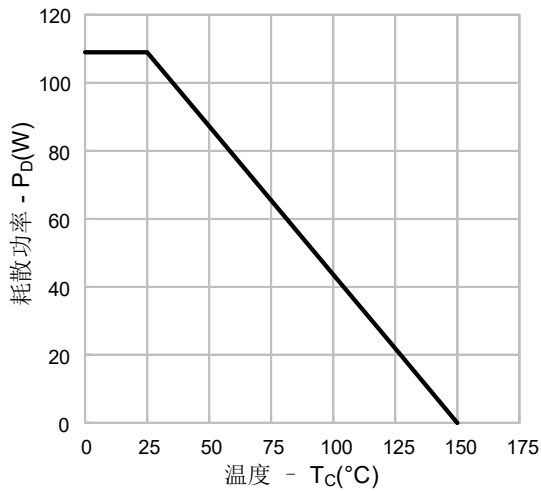


图14-1. 耗散功率vs.温度
(GPJE65R280TC)

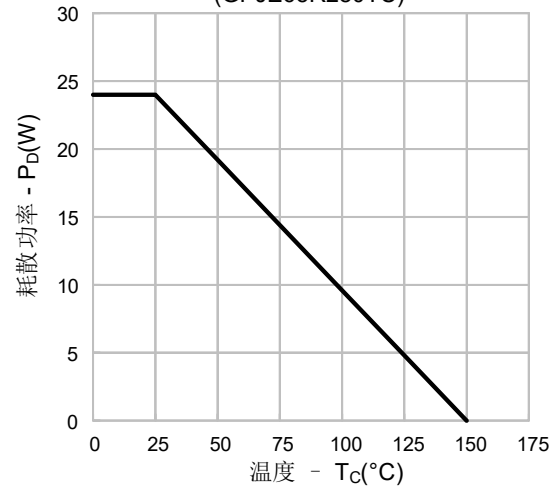


图15-1.瞬态热阻抗 vs. 脉冲宽度
(GPJE65R280TC)

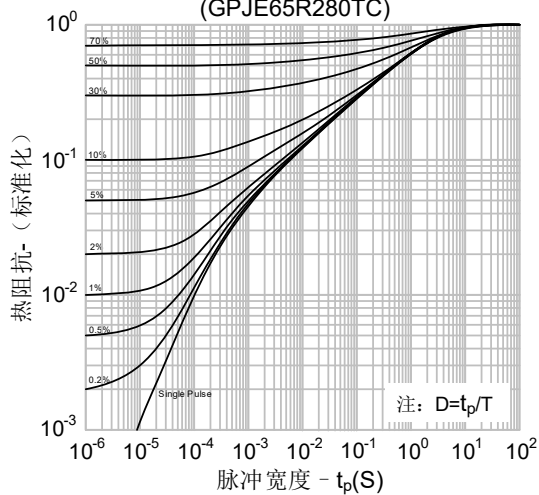
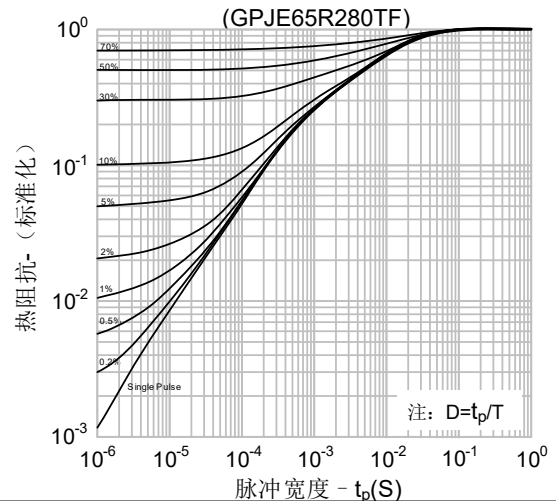
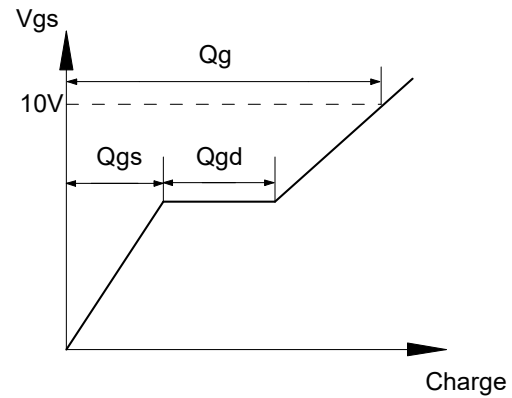
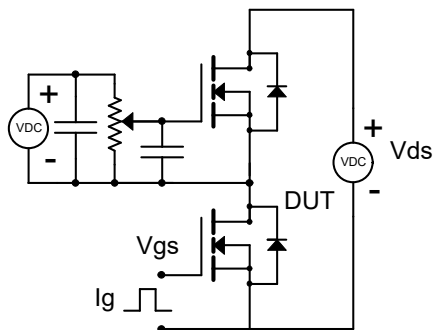


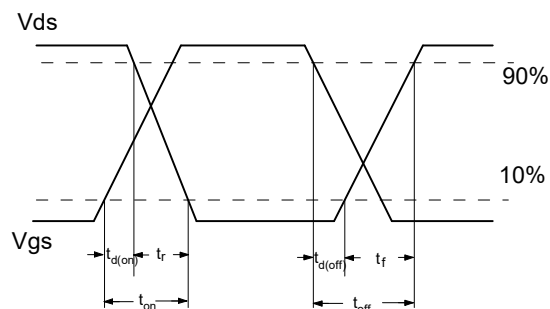
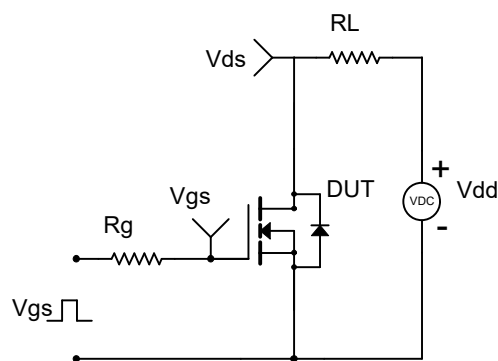
图15-2.瞬态热阻抗 vs. 脉冲宽度
(GPJE65R280TF)



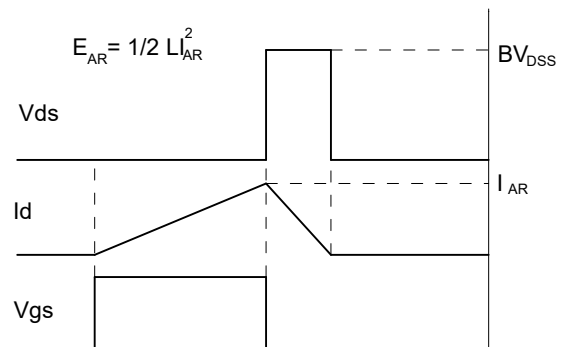
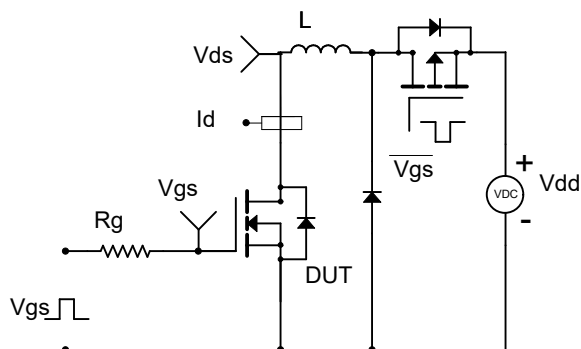
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



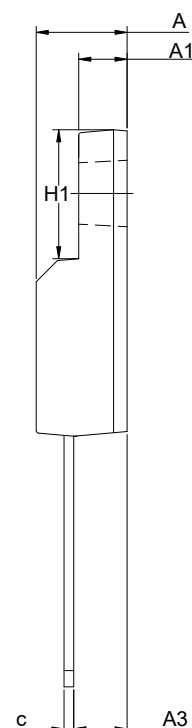
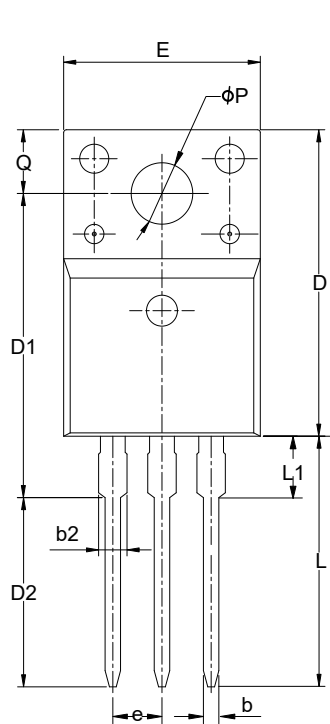
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO220F/TO-252-2L Package Information

TO-220F

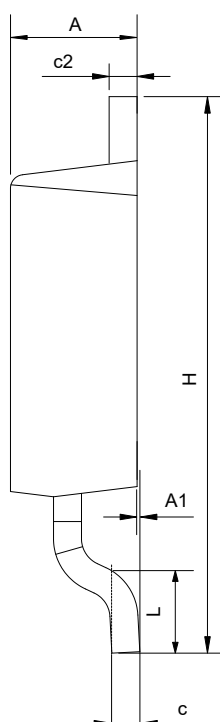
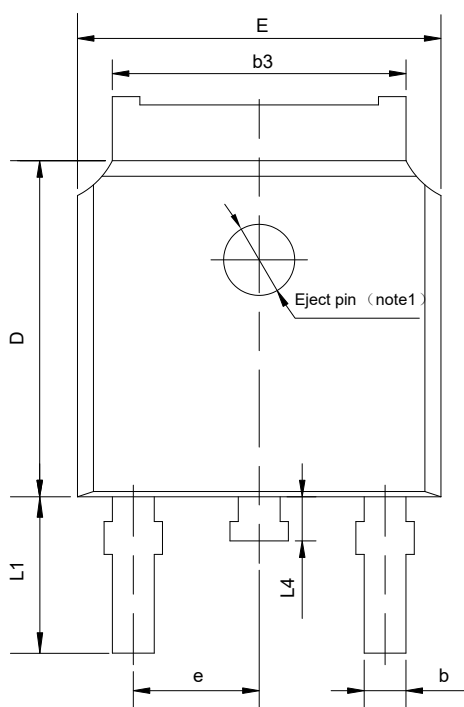
单位: 毫米



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.42	4.70	5.02
A1	2.30	2.54	2.80
A3	2.50	2.76	3.10
b	0.55	0.70	0.85
b2	—	—	1.29
c	0.35	0.50	0.65
D	15.25	15.87	16.25
D1	13.97	14.47	14.97
D2	10.58	11.08	11.58
E	9.73	10.16	10.36
e	2.54BSC		
H1	6.40	6.68	7.00
L	12.48	12.98	13.48
L1	—	—	2.00
ϕP	3.00	3.18	3.40
Q	3.05	3.30	3.55

TO-252-2L

单位: 毫米



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.10	2.30	2.50
A1	0	—	0.127
b	0.66	0.76	0.89
b3	5.10	5.33	5.46
c	0.45	—	0.65
c2	0.45	—	0.65
D	5.80	6.10	6.40
E	6.30	6.60	6.90
e	2.30TYP		
H	9.60	10.10	10.60
L	1.40	1.50	1.70
L1	2.90REF		
L4	0.60	0.80	1.00

NOTE1 : There are two conditions for this position: has an eject pin or has no eject pin.

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