

Product Summary

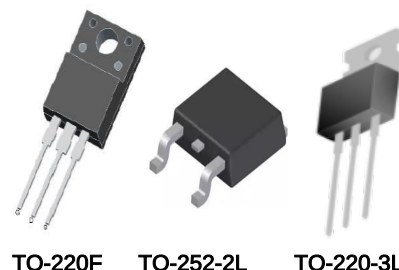
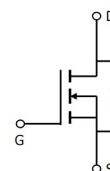
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	190mΩ@10V	20A

Feature

- Super-Junction MOSFET
- High Ruggedness
- Low RDS(ON)
- 100% Avalanche Tested
- Improved dv/dt Capability

Application

- PFC/LLC
- PC Power
- LED Lighting

PIN Description

Schematic diagram

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPJE65R240TF	TO-252-2L	JE65R240T	Tape&Reel	NA	NA	2500PCS
GPJE65R240TC	TO-220F		Tape&Reel	NA	NA	50PCS
GPJE65R240TB	TO-220-3L		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	T _C = 25℃	I _D	20	A
	T _C = 100℃	I _D	12	A
Pulsed Drain Current(Note1)		I _{DM}	80	A
Single Pulsed Avalanche Energy(Note2)		E _{AS}	409	mJ
Power Dissipation TO-220F	T _C = 25℃	P _D	25	W
Power Dissipation TO-252-2L	T _C = 25℃		114	W
Power Dissipation TO-220-3L	T _C = 25℃		139	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	℃/W
Thermal Resistance, Junction to Case TO-252-2L			1.1	℃/W
Thermal Resistance, Junction to Case TO-220-3L			0.9	℃/W

Thermal Resistance, Junction to Ambient TO-220F	R _{thja}	62.5	°C/W
Thermal Resistance, Junction to Ambient TO-252-2L		62	°C/W
Thermal Resistance, Junction to Ambient TO-220-3L		62.5	°C/W
Junction Temperature	T _J	-55~ +150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

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℃			1	μA
		V _{DS} = 650V, V _{GS} = 0V, T _J =150℃		10		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		4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		190	240	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 100V, V _{GS} = 0V, f = 1MHz		1153		pF
Output Capacitance	C _{oss}			51		
Reverse Transfer Capacitance	C _{rss}			1.1		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		4.7		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 520V, V _{GS} = 10V, I _D = 20A		31		nC
Gate-Source Charge	Q _{gs}			9.2		
Gate-Drain Charge	Q _{gd}			14		
Turn-On Delay Time	t _{d(on)}	V _{DS} = 325V, V _{GS} = 10V, I _D = 20A,R _G = 24Ω		22		ns
Turn-On Rise Time	t _r			54		
Turn-Off Delay Time	t _{d(off)}			81		
Turn-Off Fall Time	t _f			42		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 20A			1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =20A, dI/dt = 100 A/μs,V _{GS} = 0V , V _R =50V		294		ns
Body Diode Reverse Recovery Charge	Q _{rr}			4.3		uC
Reverse Recovery of Peak Current	I _{rrm}			29		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

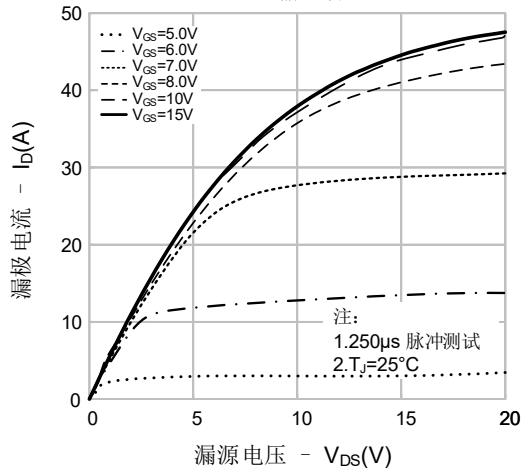


图 2. 输出特性

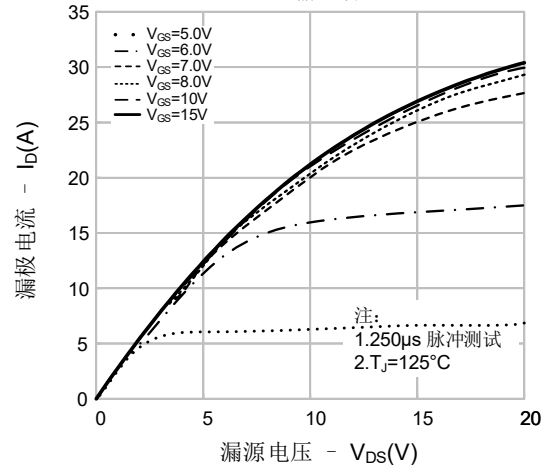


图 3. 传输特性

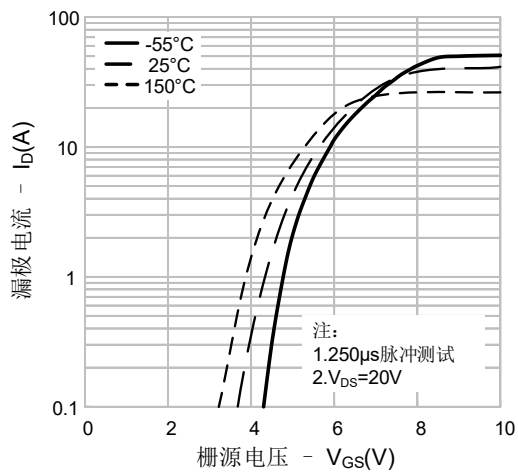


图 4. 导通电阻 vs. 漏极电流

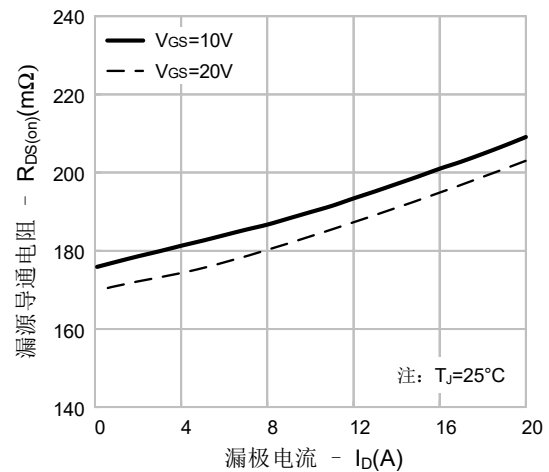


图 5. 导通电阻 vs. 漏极电流

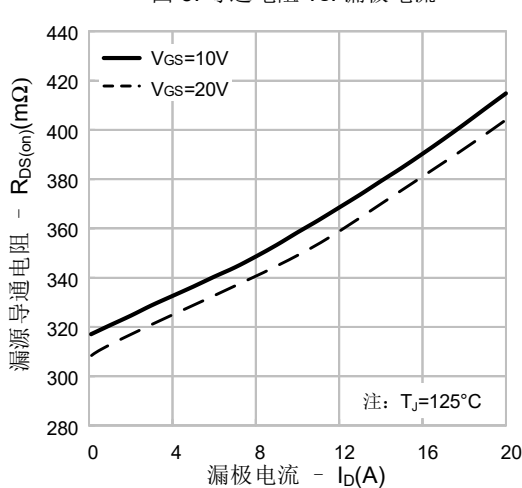


图 6. 导通电阻 vs. 栅源电压

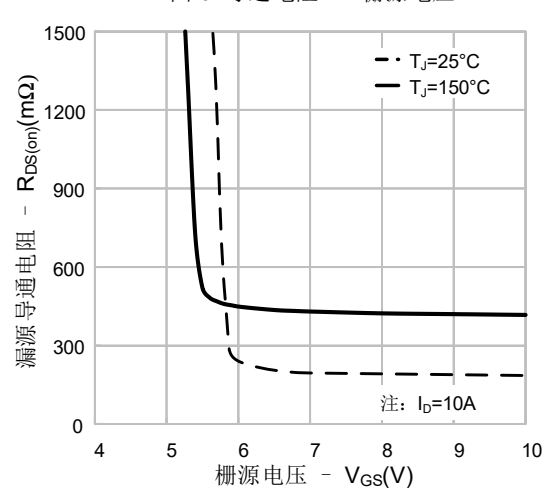


图 7. 开启电压 vs. 温度特性

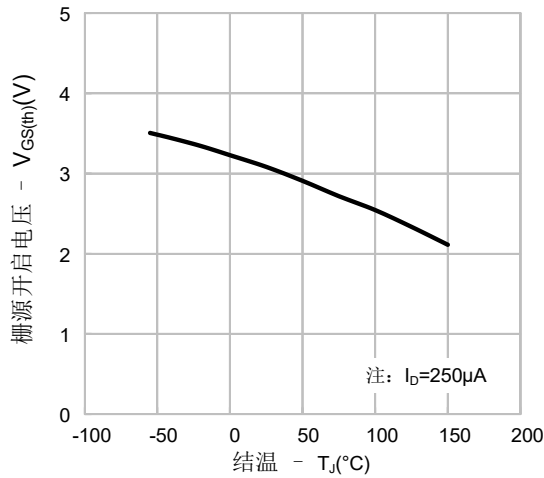


图 8. 体二极管正向压降 vs. 源极电流、温度

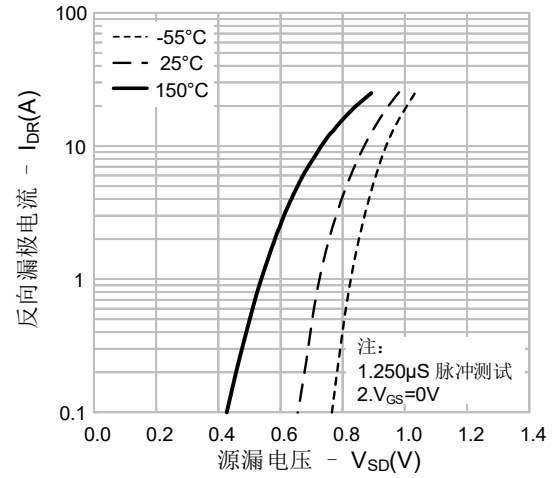


图9. 电容特性

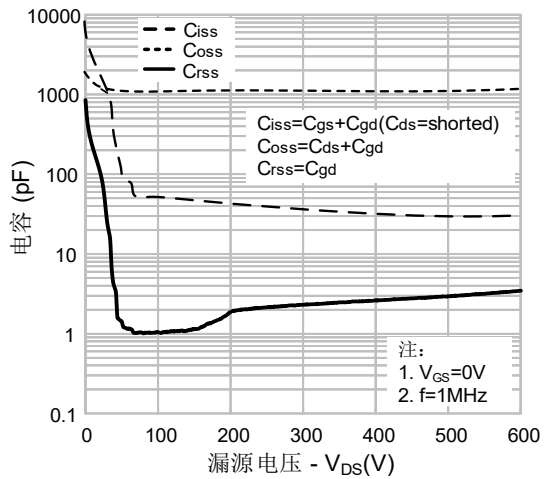


图 10. 电荷量特性

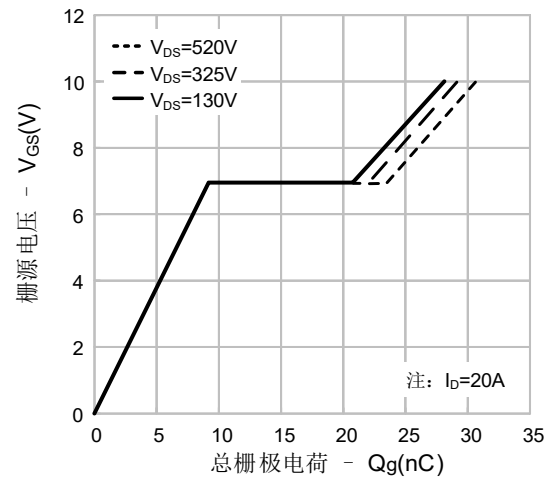


图 11. 击穿电压 vs. 温度特性

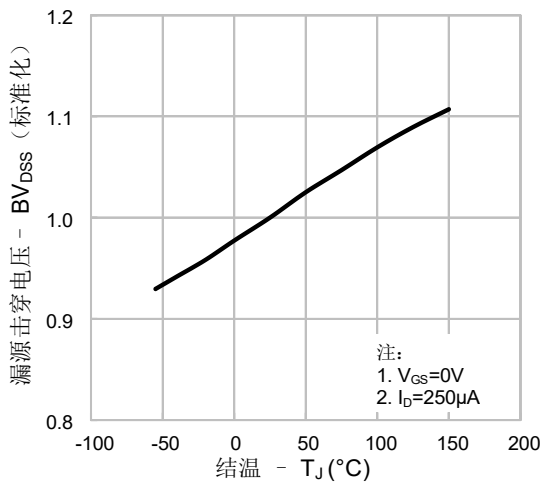


图 12. 导通电阻 vs. 温度特性

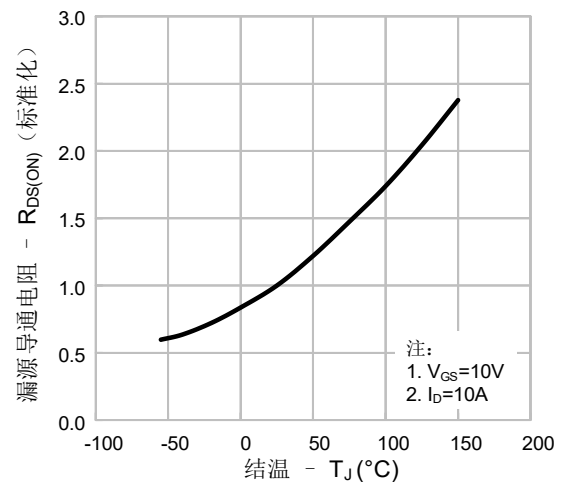


图 13-1. 最大安全工作区域(GPJE65R240TC)

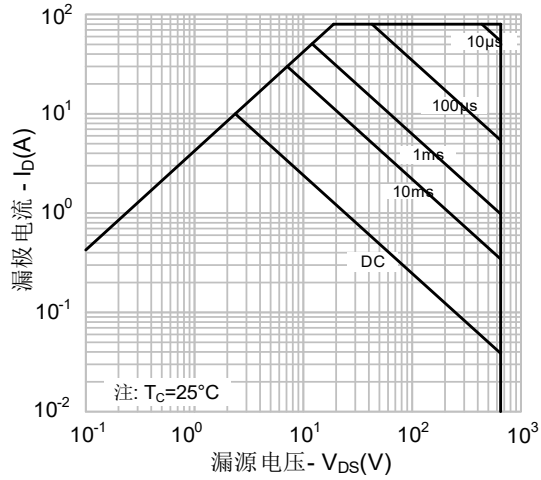


图 13-2. 最大安全工作区域(GPJE65R240TF)

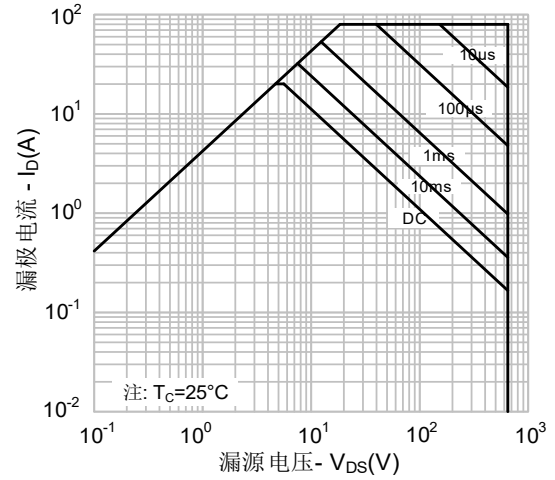


图 13-4. 最大安全工作区域(GPJE65R240TB)

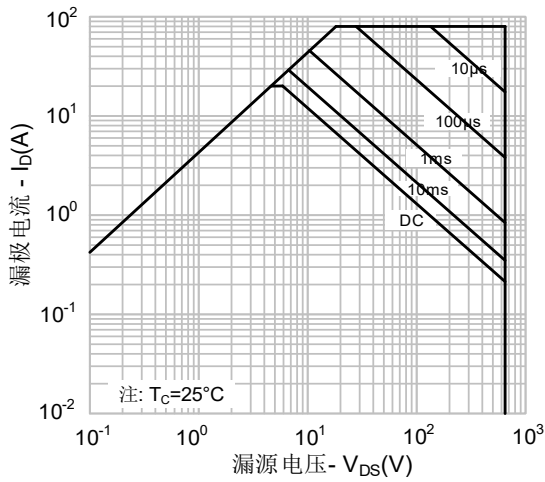


图14-1. 耗散功率 vs. 温度(GPJE65R240TC)

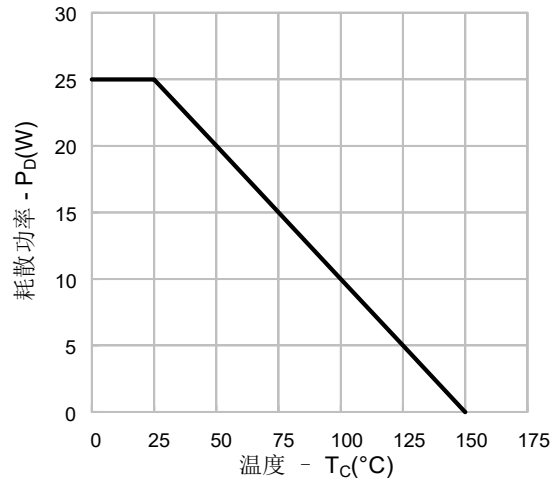


图14-2. 耗散功率 vs. 温度(GPJE65R240TF)

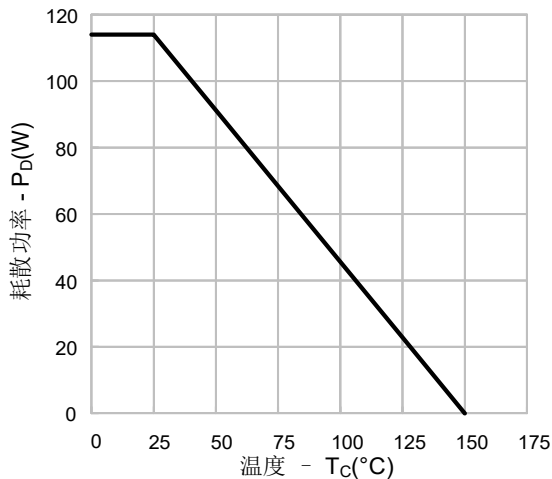


图14-3. 耗散功率 vs. 温度(GPJE65R240TB)

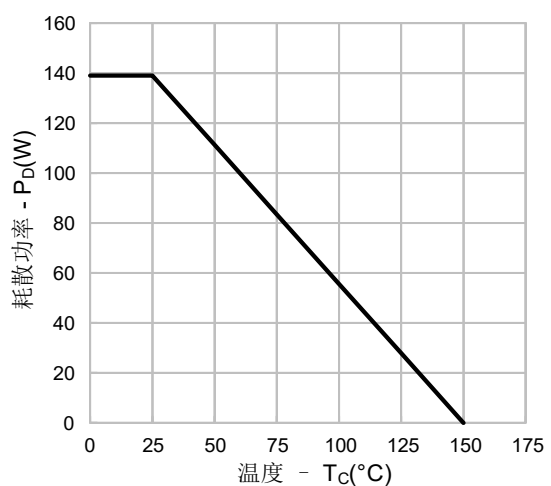


图15.漏极电流 vs. 壳温

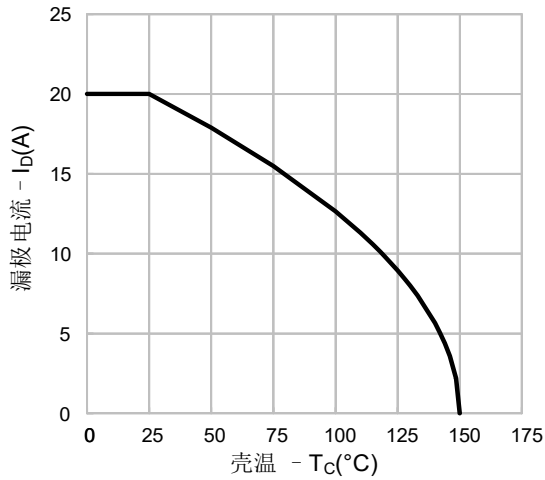


图16-1.瞬态热阻抗 vs. 脉冲宽度
(GPJE65R240TC)

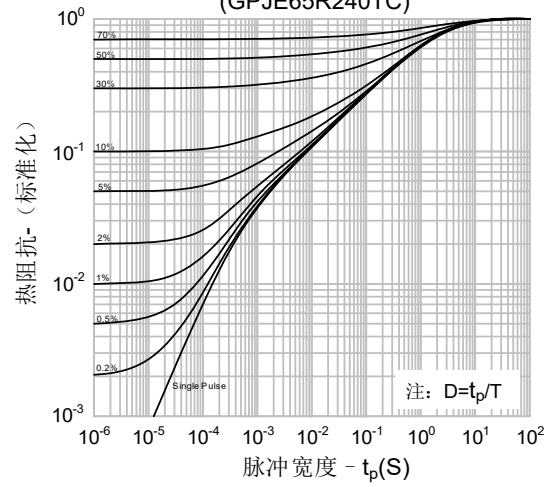


图16-2.瞬态热阻抗 vs. 脉冲宽度
(GPJE65R240TF)

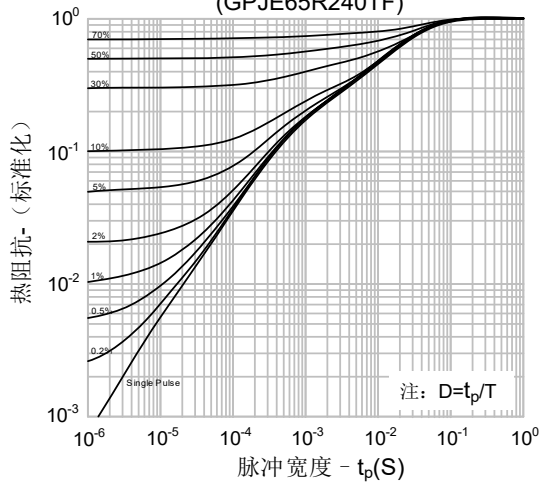
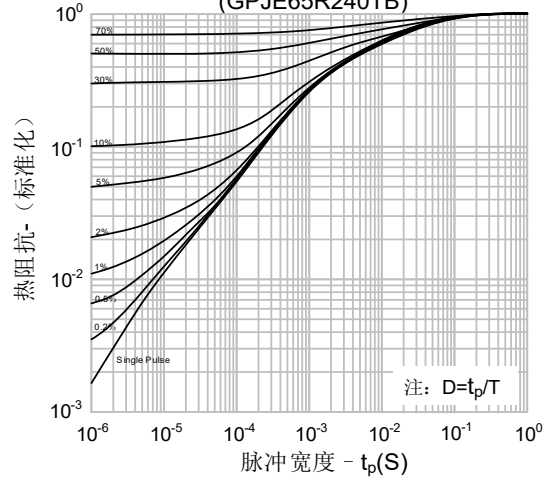
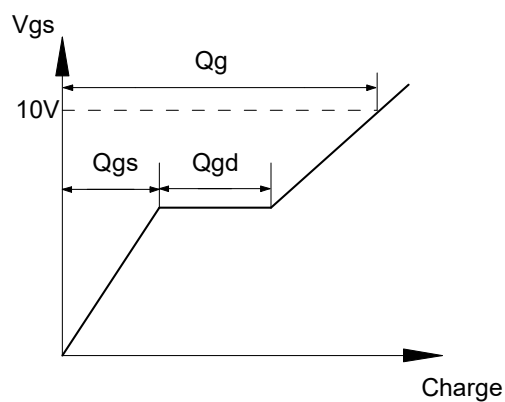
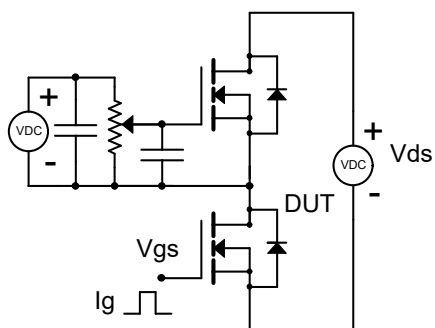
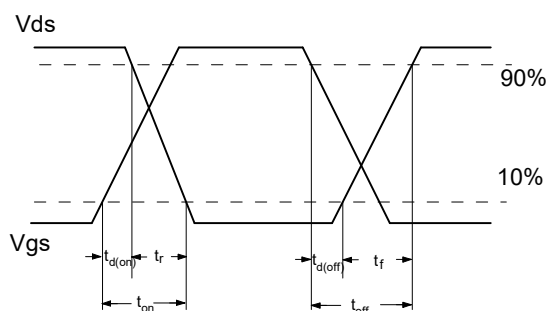
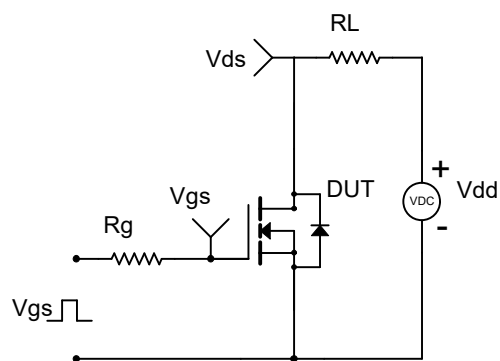


图16-3.瞬态热阻抗 vs. 脉冲宽度
(GPJE65R240TB)

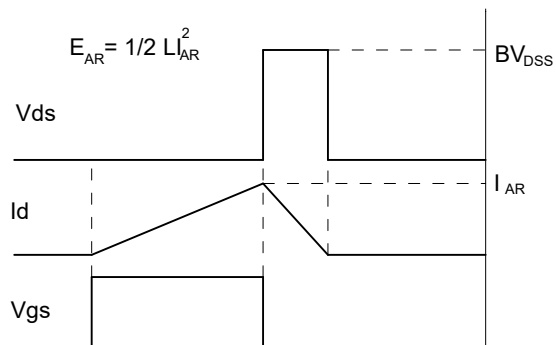
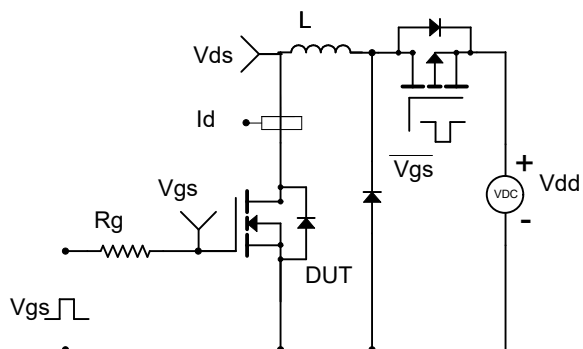




Resistive Switching Test Circuit & Waveform

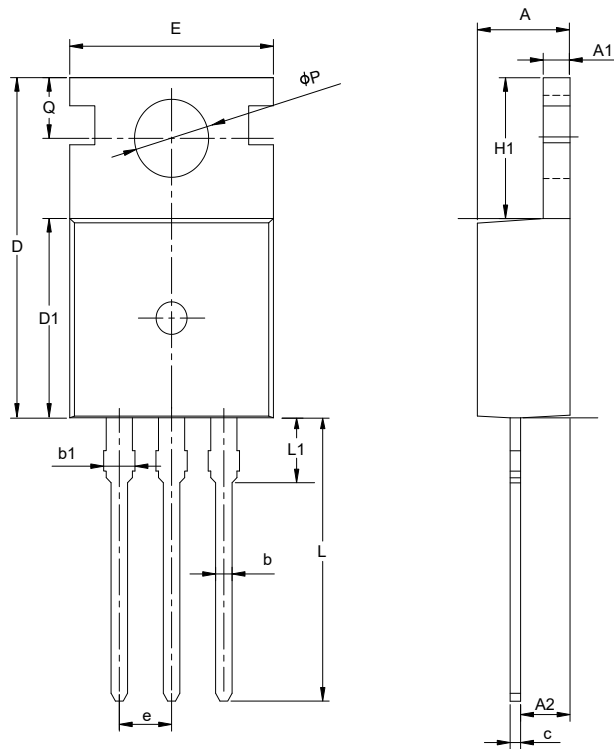


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO220-3L/TO-252-2L Package Information
TO-220-3L

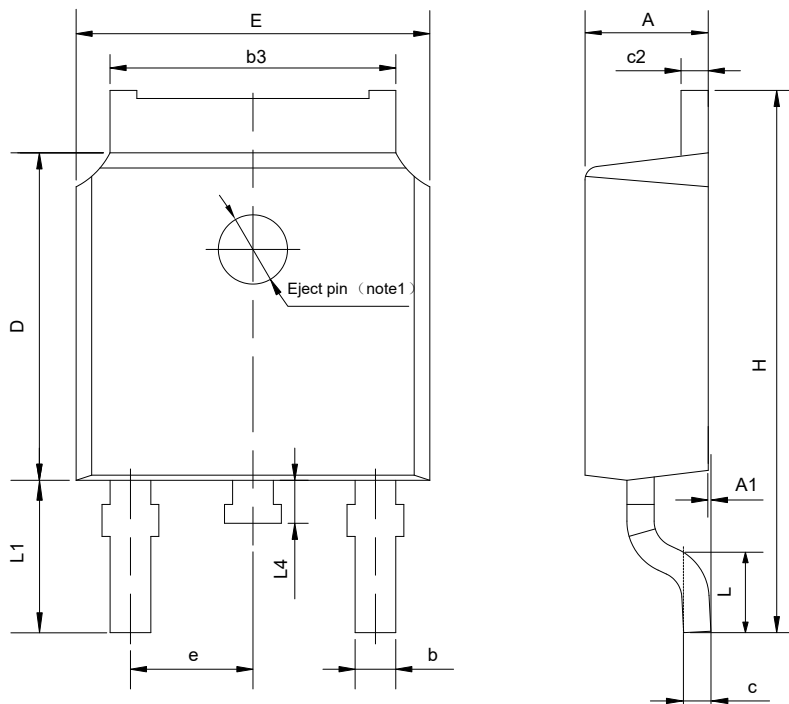
单位: 毫米



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.00	1.30	1.50
A2	1.80	2.40	2.80
b	0.60	0.80	1.00
b1	1.00	—	1.60
c	0.30	—	0.70
D	15.10	15.70	16.10
D1	8.10	9.20	10.00
E	9.60	9.90	10.40
e	2.54BSC		
H1	6.10	6.50	7.00
L	12.60	13.08	13.60
L1	—	—	3.95
ϕP	3.40	3.70	3.90
Q	2.60	—	3.20

TO-252-2L

单位: 毫米

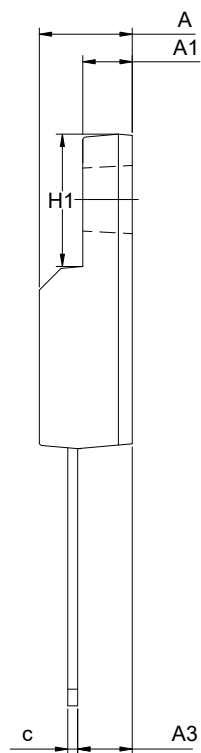
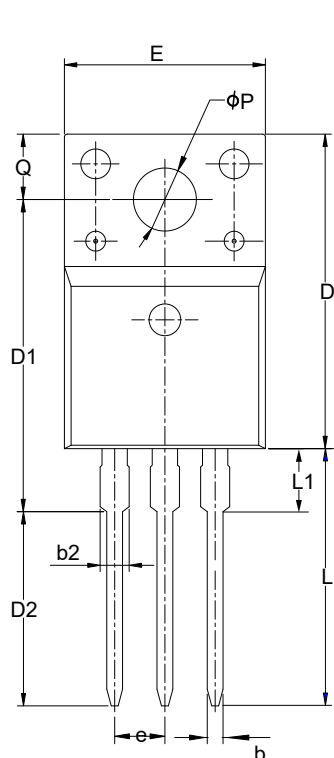


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.10	2.30	2.50
A1	0	—	0.127
b	0.66	0.76	0.89
b3	5.10	5.33	5.46
c	0.45	—	0.65
c2	0.45	—	0.65
D	5.80	6.10	6.40
E	6.30	6.60	6.90
e	2.30TYP		
H	9.60	10.10	10.60
L	1.40	1.50	1.70
L1	2.90REF		
L4	0.60	0.80	1.00

TO-220F 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	0.70	0.80	0.90
b2	—	—	1.47
c	0.35	0.50	0.65
D	15.25	15.87	16.25
D1	15.30	15.75	16.30
D2	9.30	9.80	10.30
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	—	—	3.50
φP	3.00	3.18	3.40
Q	3.05	3.30	3.55

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.