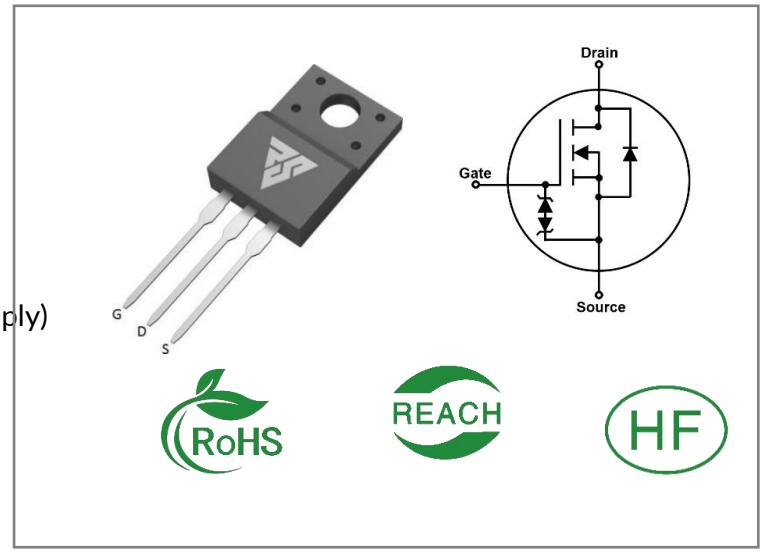
ID	R_{DS}(ON)(Typ)	VDSS
15A	225mΩ	650V



Applications:

- TV and PC Power
- Adopter and Lighting
- Telecom and UPS(Uninterruptible Power Supply)

Features:

- Low gate charge
- Low RDS(on) per chip area(Low FOM)
- Very low switching and conduction loss
- Extremely high commutation ruggedness
- 100% avalanche tested

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS65R250HF	T0-220F	RS65R250HF	Tube	50 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS65R250HF	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current TC=25℃	15	A
ID	Continuous Drain Current TC=100℃	9.5	
IDM	Pulsed Drain Current (Note*1)	45	
PD	Power Dissipation	32	W
VGS	Gate- to- Source Voltage	±25	V
EAS	Single Pulse Avalanche Engergy IAS=20A,VDS= 50V, ID=IAR，TC=25℃	290	mJ
dv/dt	MOSFET dv/dt ruggedness VDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS=0...400V Tj = 25℃, ISD≤ID	15	V/ns
TL TPKG	Maximum Temperature for Soldering	300	℃
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	260	
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the“ Absolute Maximum Ratings” Table may cause permanent damage to the device.

Thermal Resistance

Symbol	Parameter	RS65R250HF	Units	Test Conditions
RθJC	Junction-to-Case	3.9	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃
RθJA	Junction-to- Ambient	80		1 cubic foot chamber,free air.

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	650	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=650V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	1	μA	VGS=25V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-1		VGS=-25V VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance(Note*2)	--	225	250	mΩ	VGS=10V ID=7.5A
VGS(TH)	Gate Threshold Voltage	2.5	3.5	4.5	V	VGS=VDS ID=250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	22.8	--	nS	VDS=400V ID=7.5A RG=20Ω VGS=13V
trise	Rise Time	--	26.4	--		
td(OFF)	Turn- OFF Delay Time	--	50	--		
tfall	Fall Time	--	28.4	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	1100	--	pF	VGS=0V VDS=400V f=250KHz
Coss	Output Capacitance	--	27.7	--		
Crss	Reverse Transfer Capacitance	--	1.76	--		
Qg	Total Gate Charge	--	24.9	--	nC	VDS=400V ID=7.5A VGS=10V
Qgs	Gate- to- Source Charge	--	5.58	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	11.2	--		
RG	Gate resistance	--	14	--	Ω	ID=0A f=1MHz
Co(er)	Effective output capacitance, energy related	--	47.4	--	pF	VGS =10V VDS = 0...400V
Co(tr)	Effective output capacitance, time related	--	218	--	pF	VGS =10V VDS = 0...400V

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	15	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	45	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=7.5A VGS=0V
trr	Reverse Recovery Time	--	194	--	nS	VDS=100V IS=7.5A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	1.96	--	μC	
Irr	Reverse recovery current	--	20.2	--	A	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.

* 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%

Typical Feature Curve

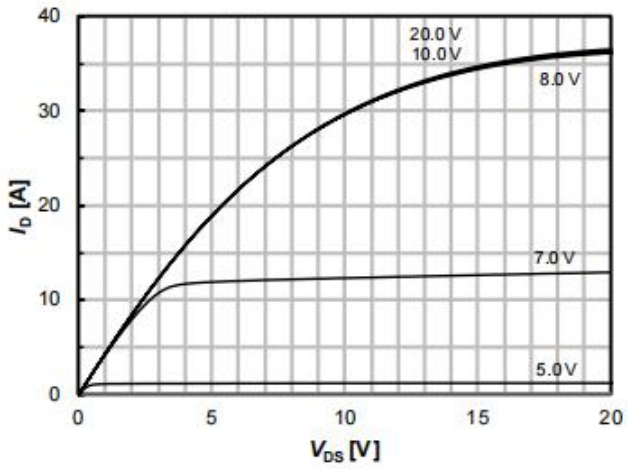


Fig. 1 Output Characteristics

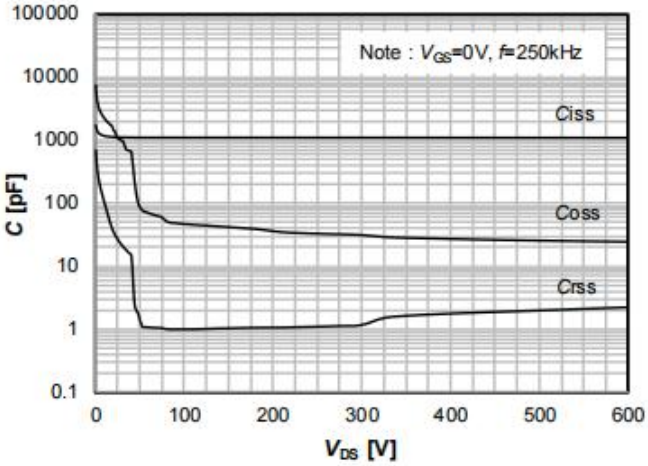


Fig. 2 Capacitances

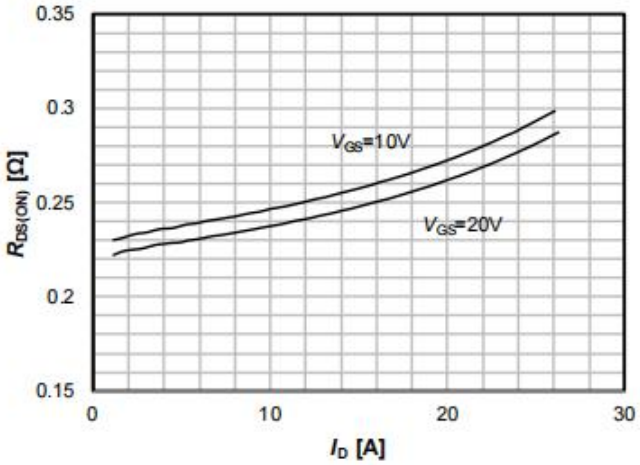


Fig. 3 On-state Resistance

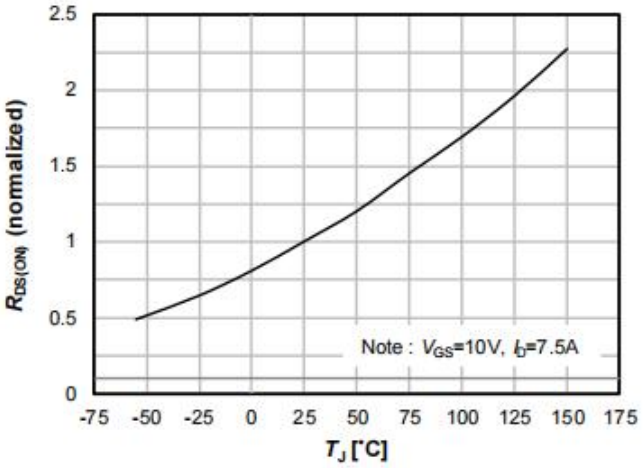


Fig. 4 On-state Resistance with Temperature

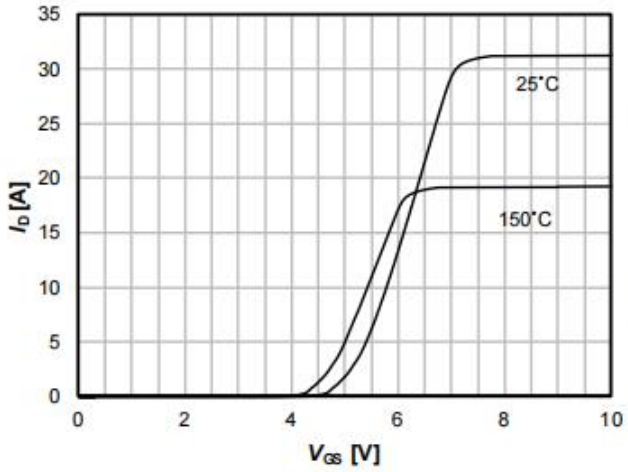


Fig. 5 Transfer Characteristics

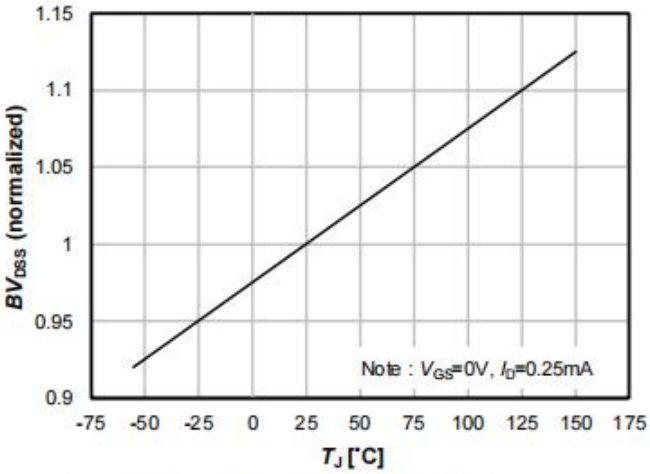


Fig. 6 Breakdown Voltage with Temperature

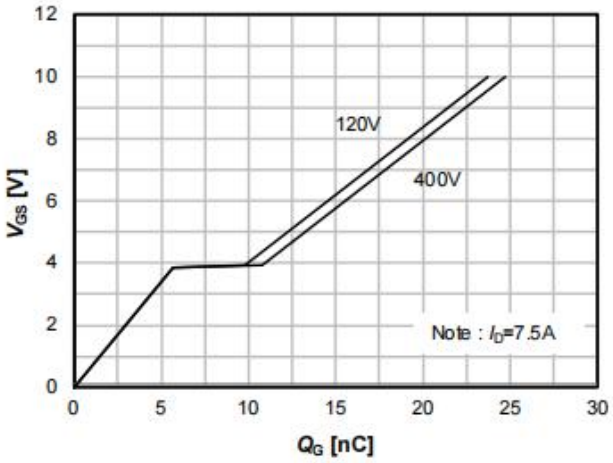


Fig. 7 Gate Charge

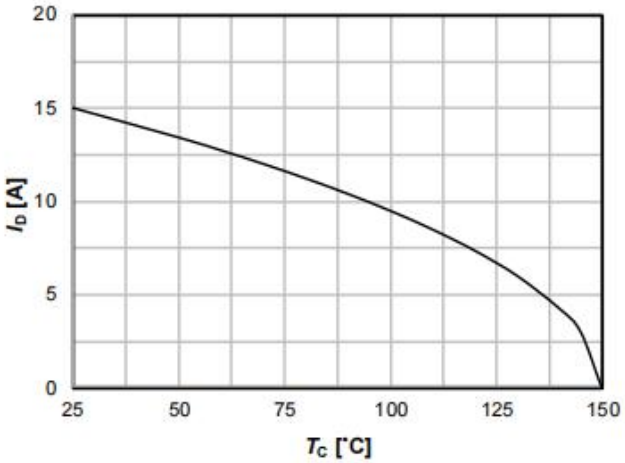


Fig. 8 Maximum Drain Current

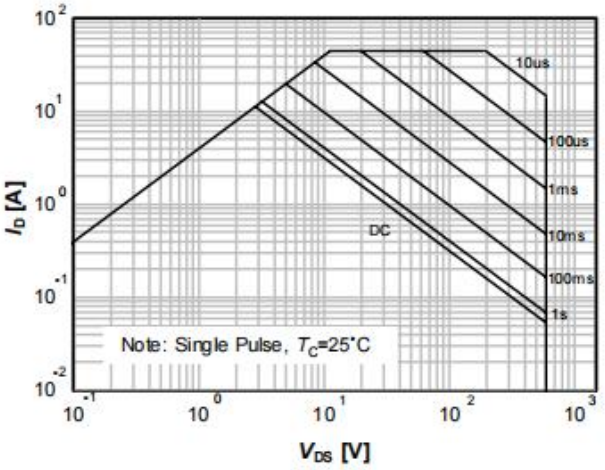


Fig. 9 Safe Operating Area

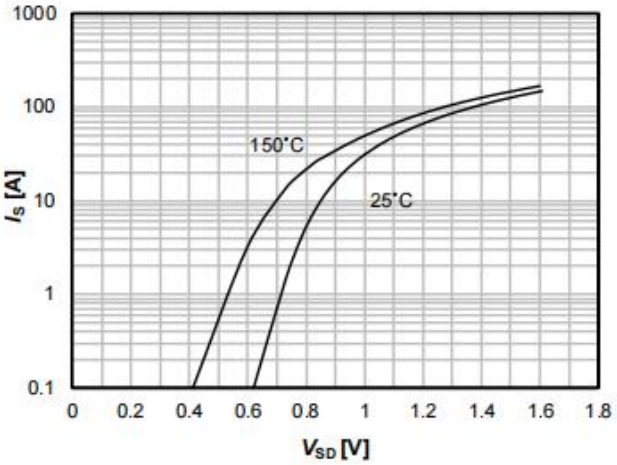


Fig. 10 Body Diode Characteristics

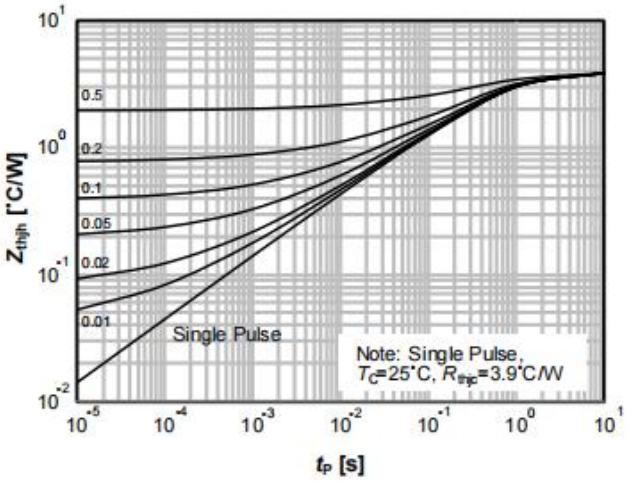


Fig. 11 Maximum Transient Thermal Characteristics

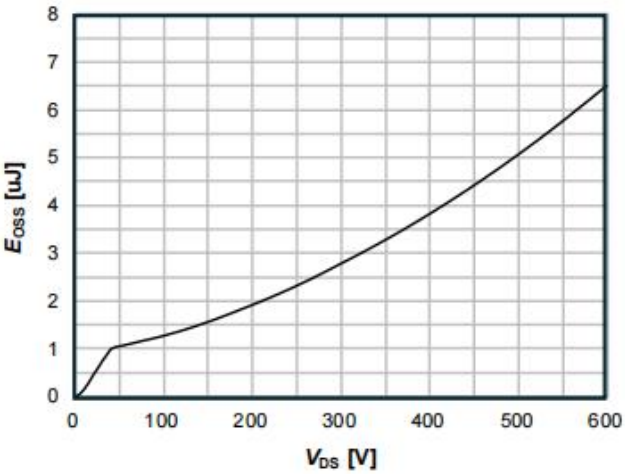


Fig. 12 C_{oss} Stored Energy

Test Circuits and Waveforms

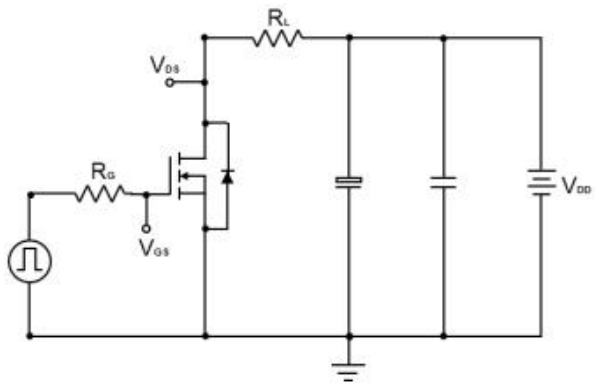


Fig. 13 Test circuit for resistive load switching times

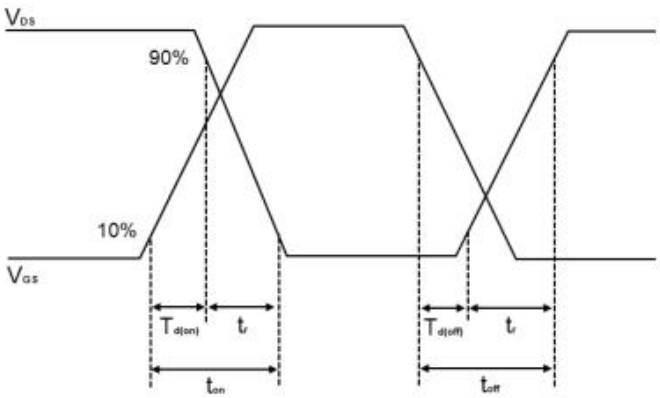


Fig. 14 Switching times waveform

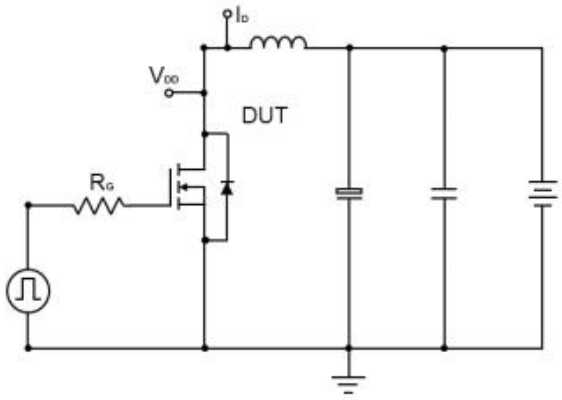


Fig. 15 Test circuit for unclamped inductive load

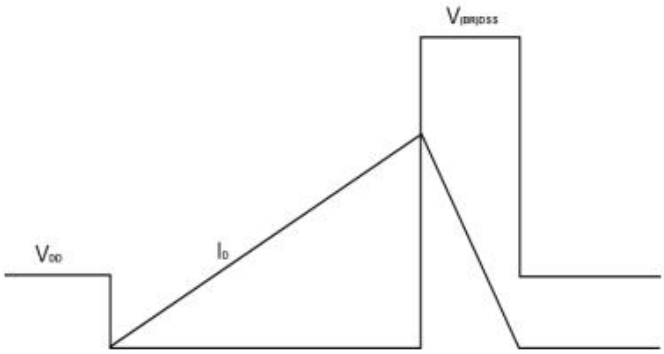


Fig. 16 Unclamped inductive waveform

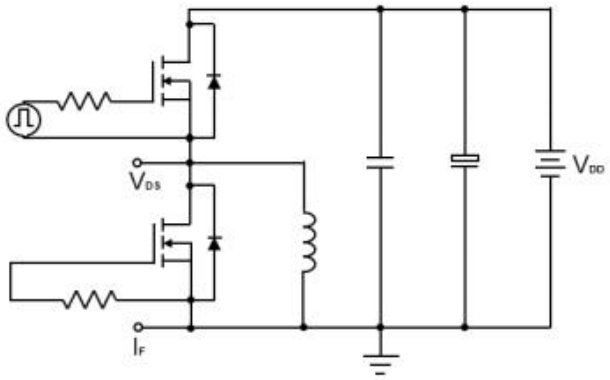


Fig. 17 Test circuit for diode characteristics

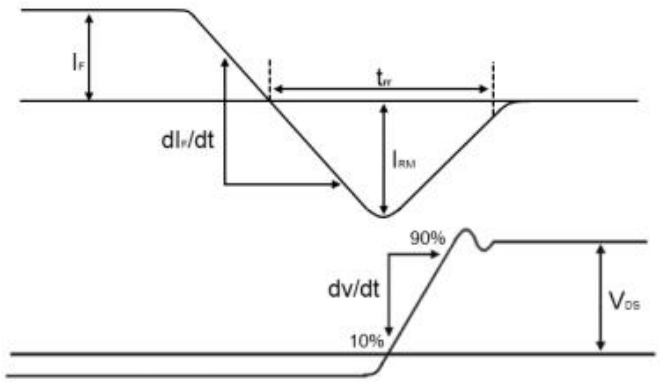
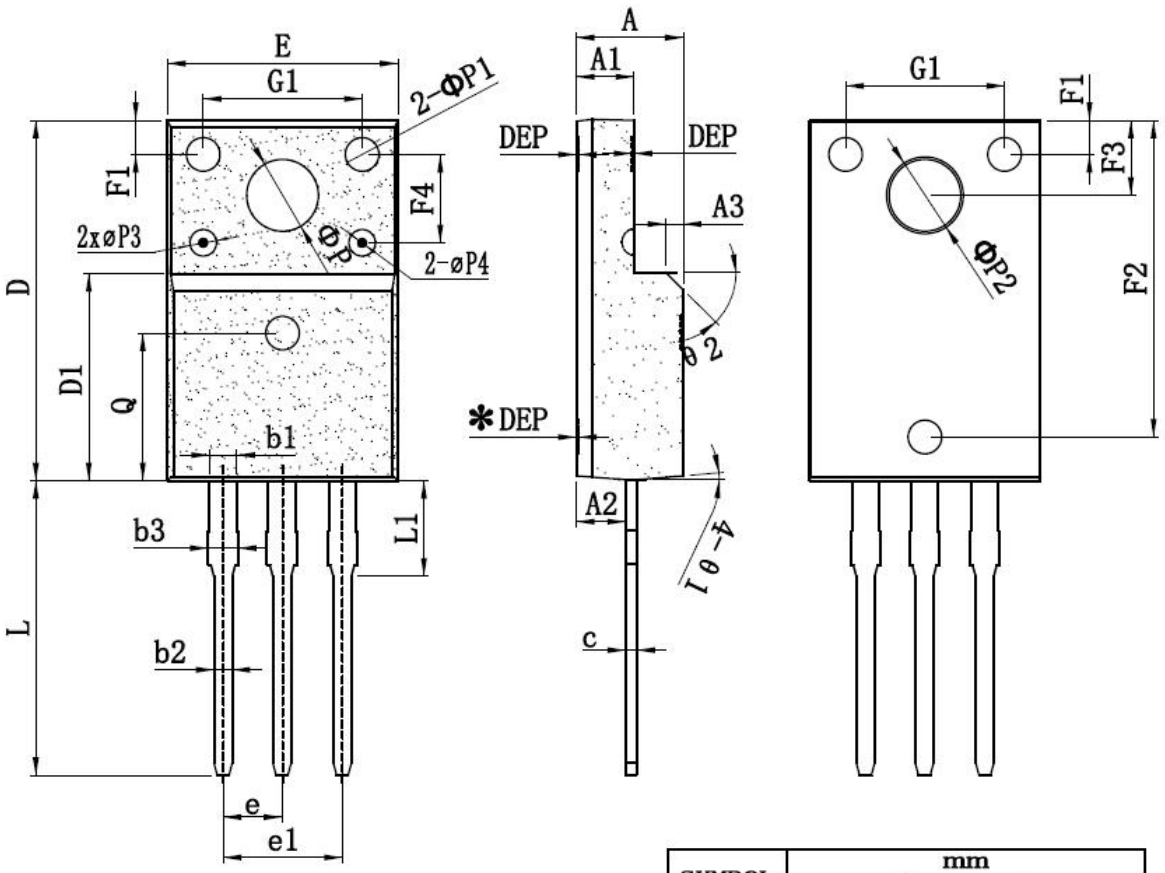
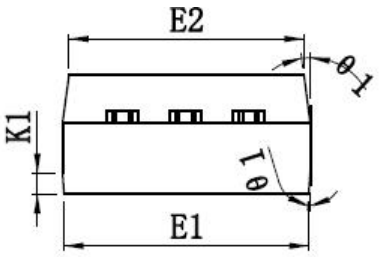


Fig. 18 Diode recovery waveform

Package outline drawing(TO-220F Unit: mm)





SYMBOL	mm		
	MIN	NOM	MAX
*A	4.50	4.70	4.90
*A1	2.34	2.54	2.74
*A2	2.66	2.76	2.86
A3		1.0REF	
b1	1.18	1.20	1.24
*b2	0.75	0.80	0.85
*b3	1.22	1.30	1.38
*c	0.45	0.50	0.55
*D	15.67	15.87	16.07
D1	9.04	9.12	9.20
*e	2.50	2.54	2.58
e1		5.08REF	
*E	10.00	10.16	10.30
E1	9.94	10.06	10.20
E2	9.40	9.50	9.60
F1	1.40	1.50	1.60
F2	13.80	13.90	14.00
*F3	3.20	3.30	3.40
F4	3.70	3.90	4.10
G1	6.90	7.00	7.10
K1	0.65	0.70	0.75
*L	12.78	12.98	13.18
*L1	3.40	3.50	3.60
Q		6.50REF	
*ΦP	3.08	3.18	3.28
ΦP1	1.45	1.55	1.65
ΦP2	3.30	3.40	3.50
ΦP3	0.95	1.15	1.35
ΦP4	0.25	0.30	0.35
θ1	3°	5°	7°
θ2	42°	45°	48°
*DEF	0.05	0.10	0.15

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