GAIA TECH

SR1810DL/SR1810TL

100V N-Channel Split Gate MOSFET

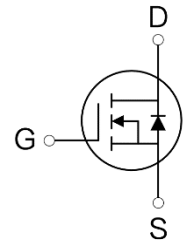
FEATURES

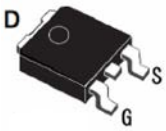
- Super Low Gate Charge
- 100% EAS Guaranteed
- RoHS compliant
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

RoHS

APPLICATIONS

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification





TO-252D

Device Marking and Package Information		
Device	**Package**	**Marking**
SR1810DL	TO-252-2L	SR1810DL
SR1810TL	TO-220-3L	SR1810TL

Absolute Maximum Ratings at T_j= 25℃ unless otherwise noted				
Parameter		**Symbol**	**Value**	**Unit**
Drain-Source Voltage (V_{GS} = 0V)		V_{DSS}	100	V
Continuous Drain Current T_C = 25℃	(note1)	I_D	60	A
Continuous Drain Current T_C = 100℃	(note1)		41	A
Pulsed Drain Current	(note2)	I_{DM}	180	A
Gate Source Voltage		V_{GSS}	± 20	V
Single Pulse Avalanche Energy	(note3)	E_{AS}	180	mJ
Power Dissipation T_C = 25℃	(note4)	P_D	70	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	℃

Thermal Characteristics				
Parameter		**Symbol**	**Value**	**Unit**
Thermal Resistance, Junction-to-Case	(note1)	$R_{\theta JC}$	2.08	℃/W

Electrical Characteristics T_j= 25℃ unless otherwise specified						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V, T_J = 25℃	--	--	1	uA
		V_{DS} = 100V, V_{GS} = 0V, T_J = 55℃	--	--	5	uA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.8	3.0	V
Drain-Source On-Resistance (note2)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	16	20	mΩ
		V_{GS} = 4.5V, I_D = 15A	--	17	25	mΩ
Dynamic						
Input Capacitance	C_{iss}	$_{GS}$=0V, $_{DS}$=25V, Frequency=1.0MHz	--	1200	--	pF
Output Capacitance	C_{oss}		--	470	--	
Reverse Transfer Capacitance	C_{rss}		--	28.7	--	
Gate Resistance	R_g	V_{GS} = 0V,f = 1.0MHz	--	2.0	--	Ω
Total Gate Charge	Q_g	V_{DD} = 50V, I_D = 20A, V_{GS} = 10V	--	24	--	nC
Gate-Source Charge	Q_{gs}		--	3.6	--	
Gate-Drain Charge	Q_{gd}		--	5	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 50V, I_D = 20A V_{GS} = 10V,R_G = 3Ω	--	8.3	--	ns
Turn-on Rise Time	t_r		--	3.7	--	
Turn-off Delay Time	$t_{d(off)}$		--	25	--	
Turn-off Fall Time	t_f		--	13	--	
Body Diode Characteristics						
Continuous Body Diode Current	I_S		--	--	47	A
Body Diode Voltage	V_{SD}	T_J = 25℃, I_{SD} = 20A, V_{GS} = 0V	--	0.94	1.2	V
Reverse Recovery Time	t_{rr}	T_J = 25℃, I_F = 20A di_F/dt = 100A/μs	--	31	--	ns
Reverse Recovery Charge	Q_{rr}		--	112	--	nC

Notes

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width≦300us , duty cycle≦2%
3. Limited by $T_J$max , starting T_J=25°C, L = 1 0mH, V_{DD} =25V., V_{GS} =10V.
4. The power dissipation is limited by 150℃ junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics T_J = 25℃, unless otherwise noted

Fig.1 Typical Output Characteristics

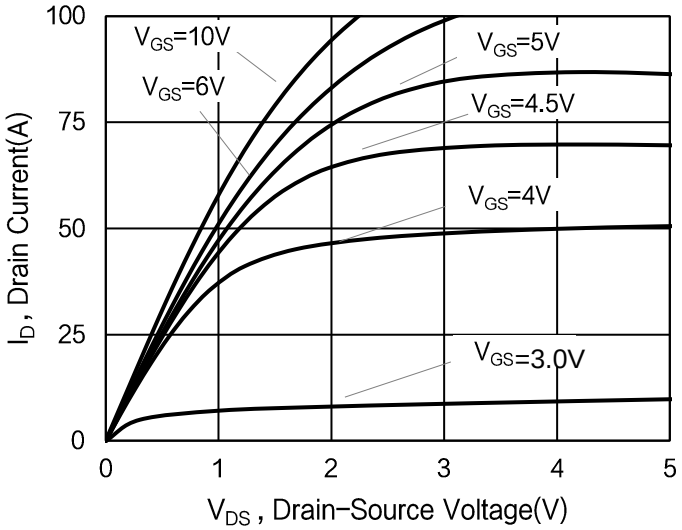


Fig.2 On-Resistance vs. G-S Voltage

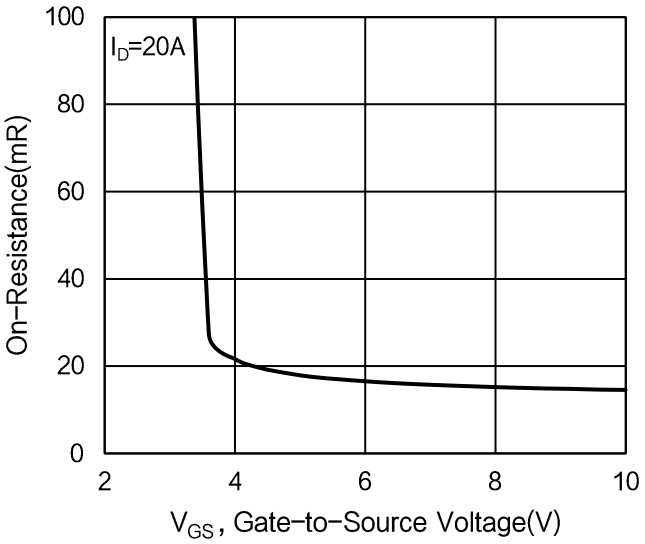


Fig.3 Forward Characteristics of Reverse Diode

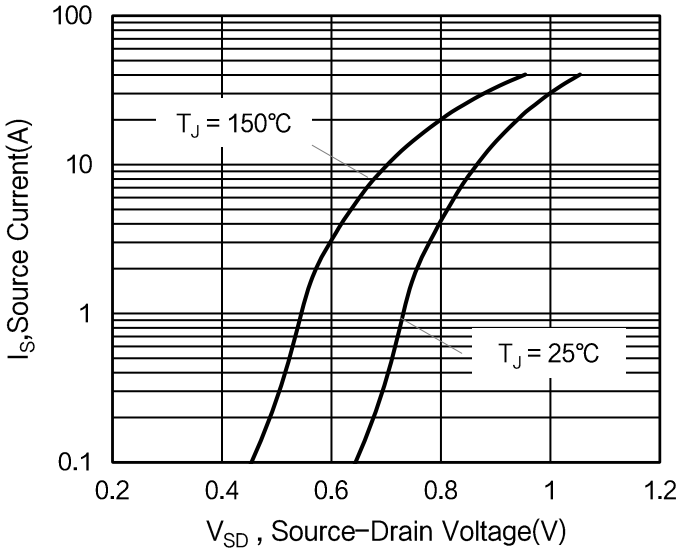


Fig.4 Gate-Charge Characteristics

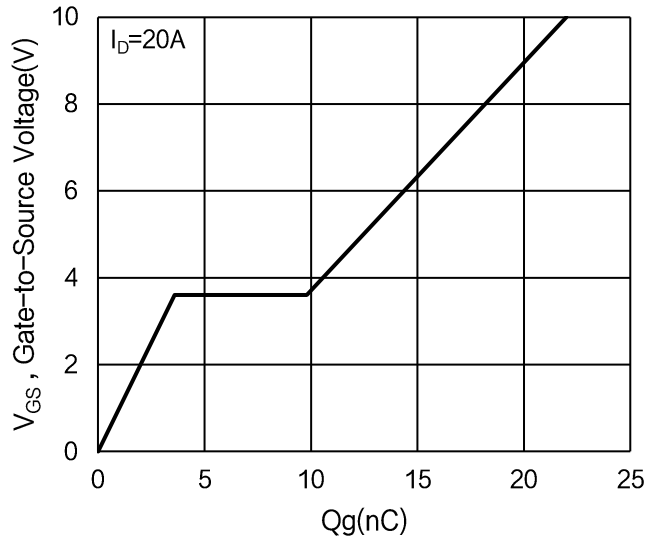


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

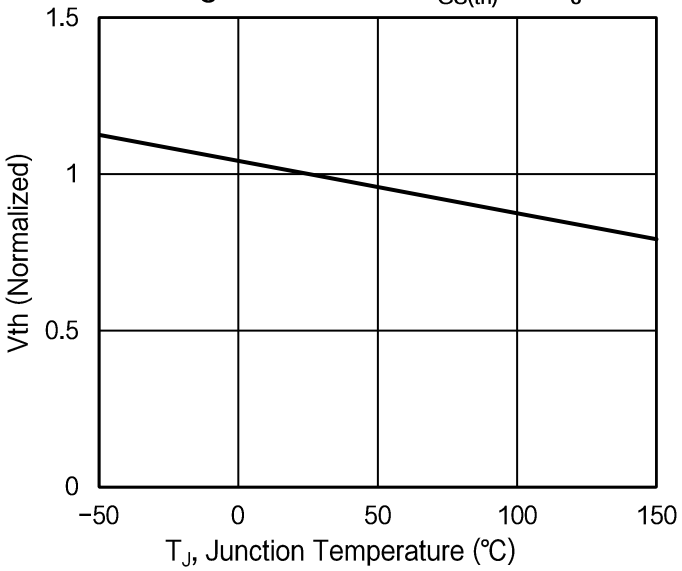
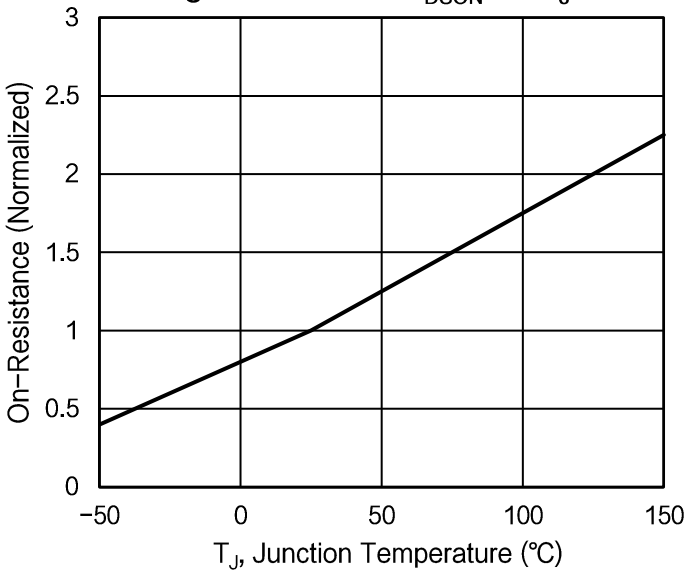


Fig.6 Normalized R_{DSON} v.s T_J



Typical Characteristics T_J = 25℃, unless otherwise noted

Fig.7 Capacitance

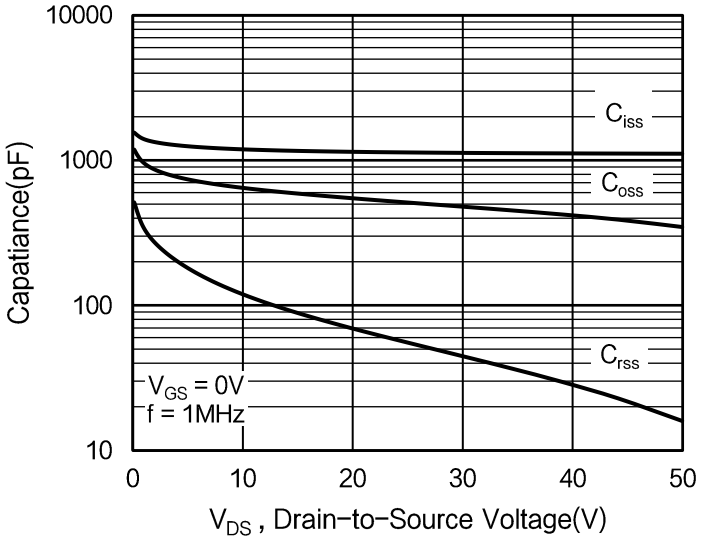


Fig.8 Safe Operating Area

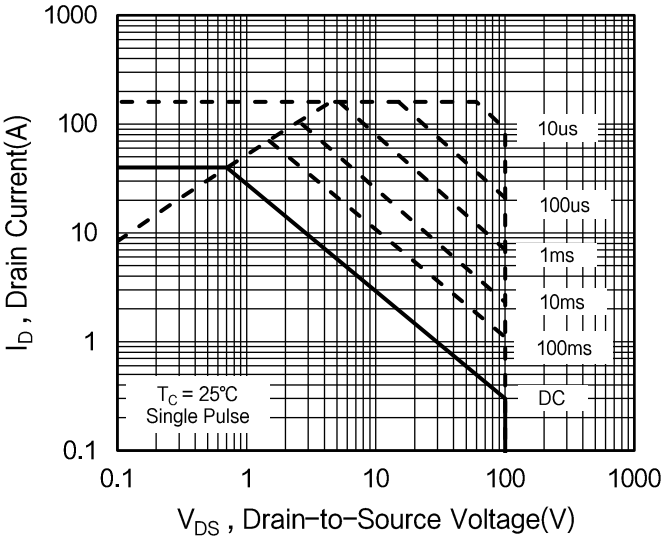


Fig.9 Normalized Maximum Transient Thermal Impedance

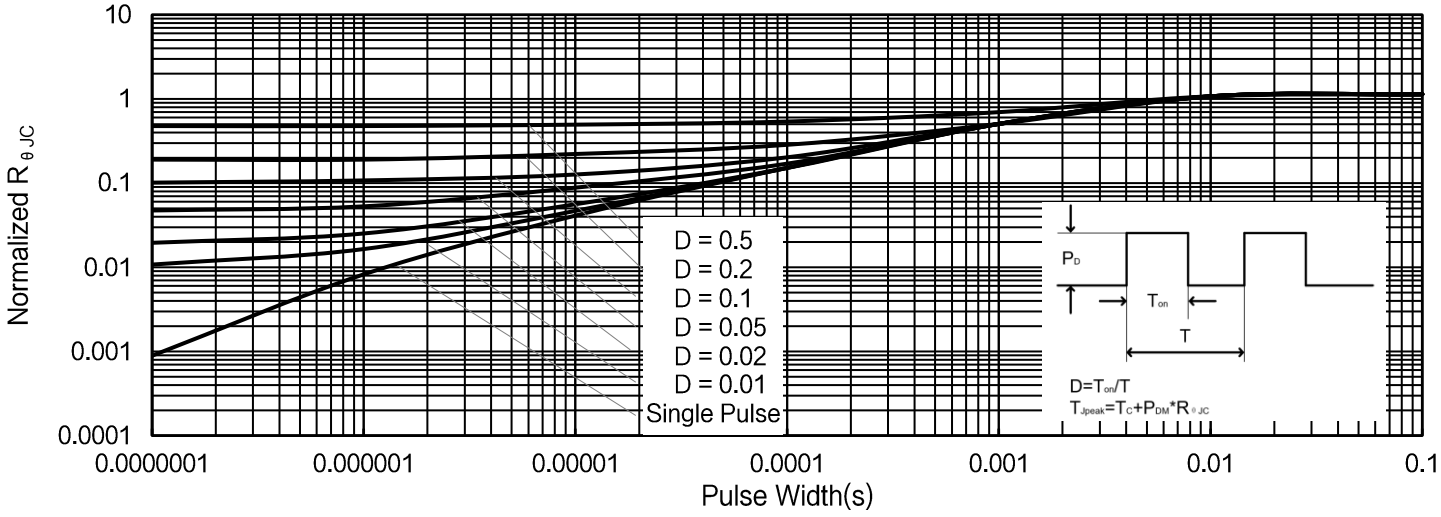


Figure A：Gate Charge Test Circuit and Waveform

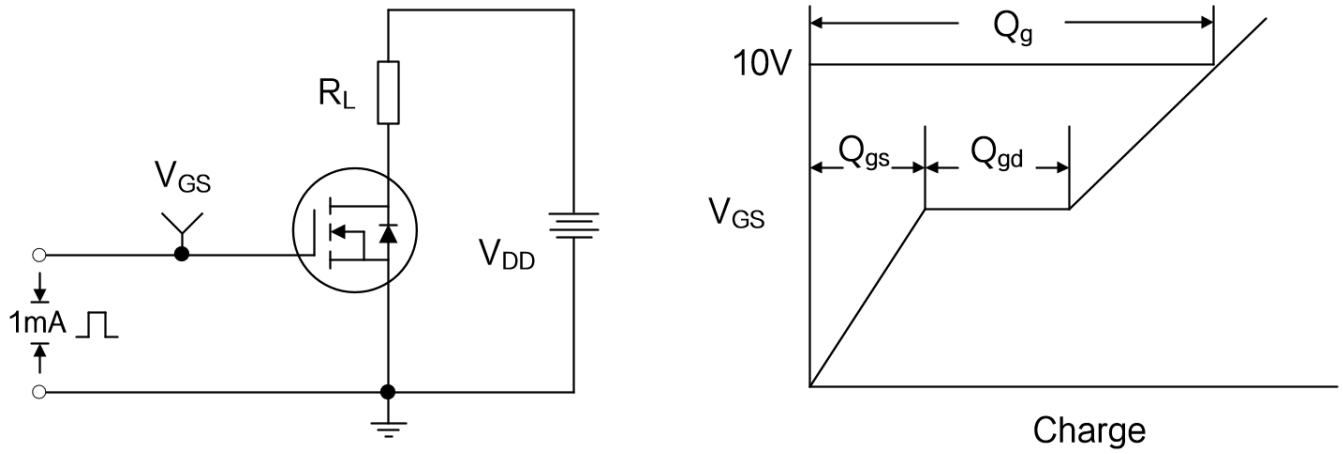


Figure B：Resistive Switching Test Circuit and Waveform

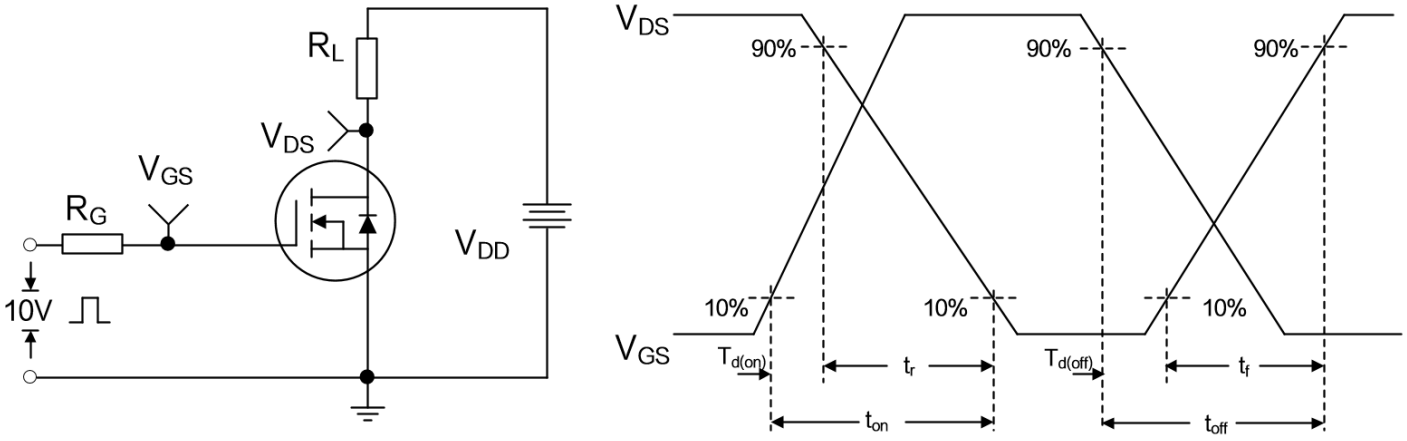
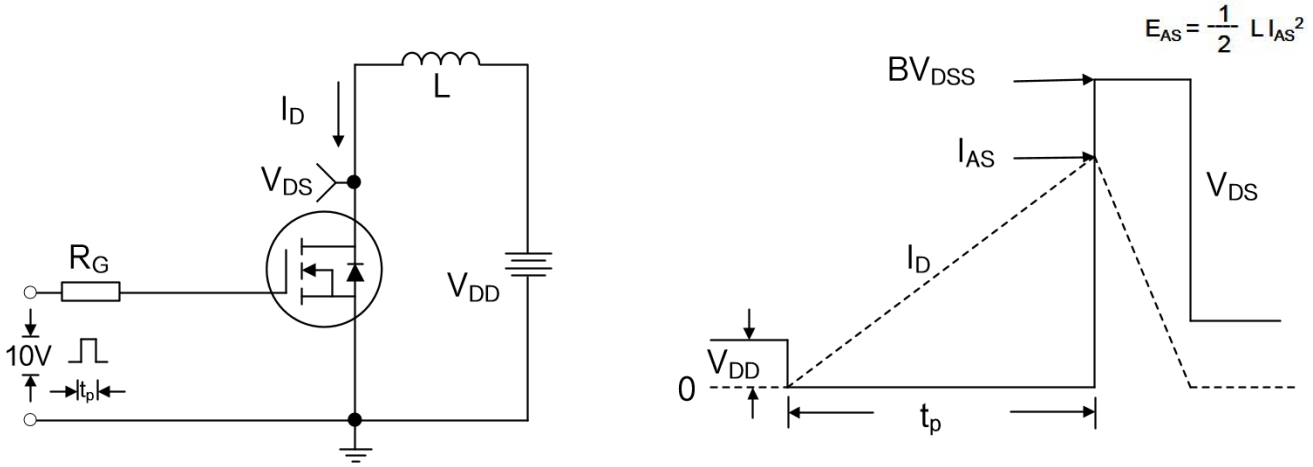
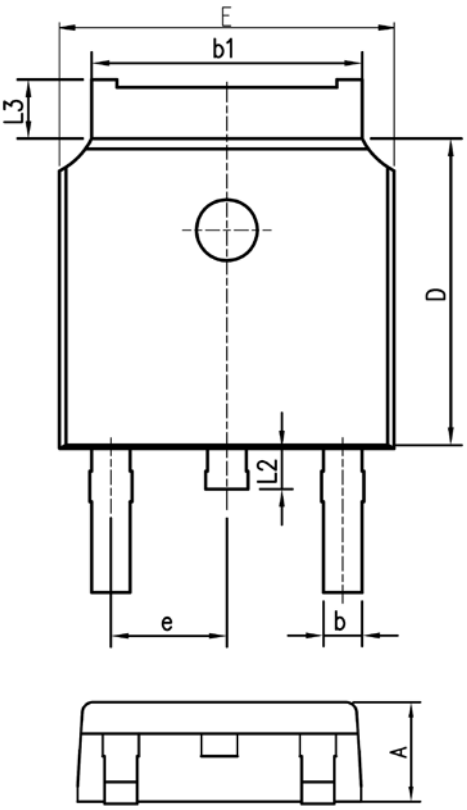


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



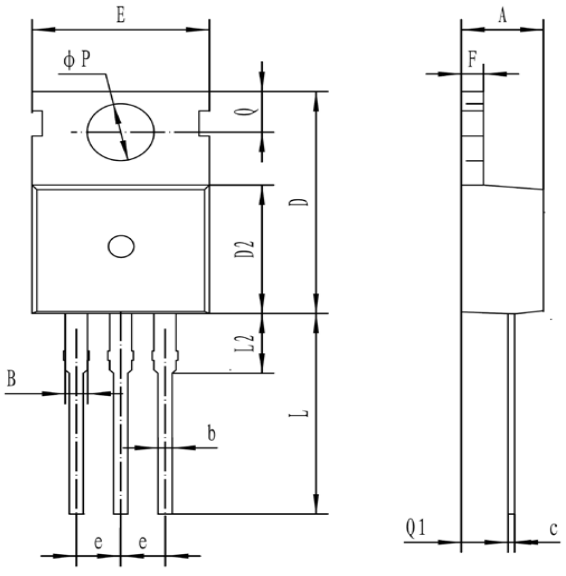
PACKAGE MECHANICAL DATA

DPAK TO-252 **Unit：mm**



SYMBOL	mm	
	MIN	MAX
A	2.10	2.50
A1	0.97	1.17
b	0.63	0.93
b1	5.13	5.53
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
e	2.286BSC	
L	2.50	3.30
L1	1.20	1.80
L2	0.60	1.00
L3	0.85	1.30

TO-220T



符号 symbol	MIN	MAX
A	4.30	4.70
B	1.10	1.40
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80