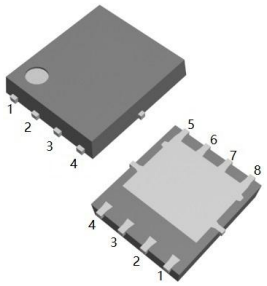
D25N02HL

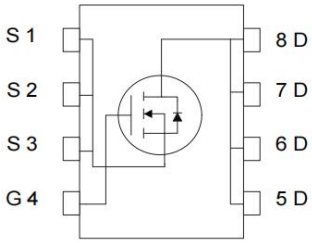
25 Amps,20 Volts N-CHANNEL Power MOSFET

FEATURE

- 25A,20V,$R_{DS(ON)MAX}$=5.0mΩ V_{GS}=4.5V/1A
  $R_{DS(ON)MAX}$=6.0mΩ V_{GS}=2.5V/1A
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

DFN3*3





Absolute Maximum Ratings(T_C=25℃,unless otherwise noted)

Parameter	Symbol	D25N02HL	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±12	
Continuous Drain Current	I_D	25	A
Pulsed Drain Current(Note1)	I_{DM}	60	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	100	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150	℃
Maximum lead temperature for soldering purposes, 1/8″from case for 5 seconds	T_L	260	℃

Thermal Characteristics

Parameter		Symbol	MAX	Units
Thermal resistance , Channel to Case		$R_{th(ch-c)}$	5	℃/W
Thermal resistance , Channel to Ambient(4,5)		$R_{th(ch-a)}$	55	
Maximum Power Dissipation	T_C=25℃	P_D	25	W

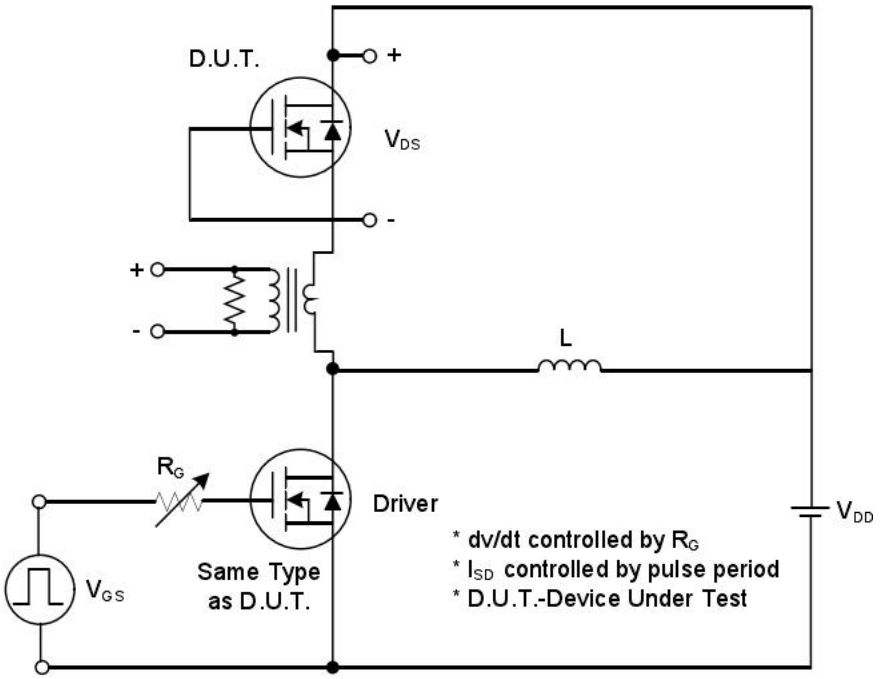
Electrical Characteristics (T_c=25℃,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	20	—	—	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V_{GS}=0V	—	—	1	μA
Gate-Body Leakage Current,Forward	I_{GSSF}	V_{GS}=12V,V_{DS}=0V	—	—	500	nA
Gate-Body Leakage Current,Reverse	I_{GSSR}	V_{GS}=-12V,V_{DS}=0V	—	—	-500	nA
On Characteristics						
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.45	—	0.90	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=1A	—	4.1	5.0	mΩ
	$R_{DS(on)}$	V_{GS}=2.5V,I_D=1A	—	4.9	6.0	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V,	—	3547	—	pF
Output Capacitance	C_{oss}	f=1.0MHZ	—	377	—	pF
Reverse Transfer Capacitance	C_{rss}		—	261	—	pF
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=10V,R_{GEN}=10Ω	—	0.4	—	ns
Turn-On Rise Time	t_r	V_{GS}=10V	—	1.6	—	ns
Turn-Off Delay Time	$t_{d(off)}$		—	18.8	—	ns
Turn-Off Fall Time	t_f		—	231.8	—	ns
Total Gate Charge	Qg	V_{DS}=10V,I_D=1A,	—	34	—	nC
Gate-Source Charge	Qgs	V_{GS}=10V	—	8	—	nC
Gate-Drain Charge	Qgd		—	5	—	nC
Drain-Source Body Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V	—	—	1.2	V
Reverse Recovery Time	t_{rr}	I_F=1A, V_{DS}=10V,	—	27	—	ns
Reverse Recovery Charge	Qrr	di/dt=50A/us，(Note3)	—	7	—	nC

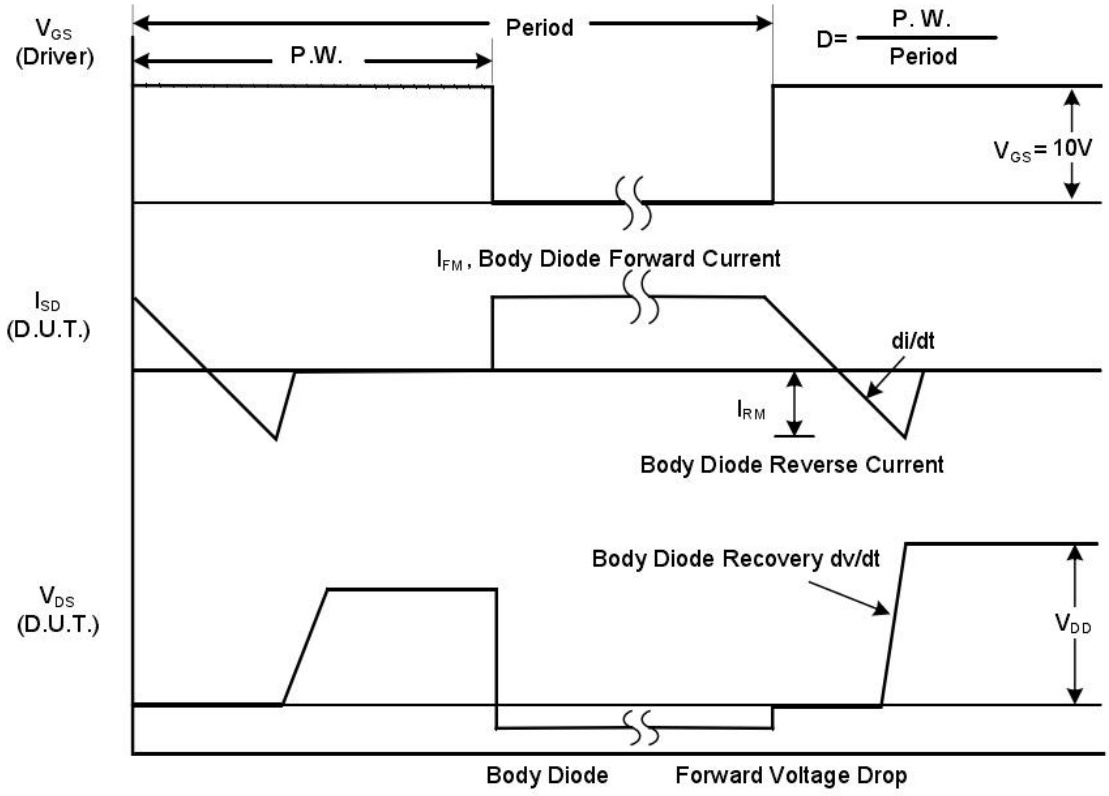
Notes

1. Repetitive Rating:pulse width limited by maximum junction temperature.
2. L=0.5mH,R_g=25Ω,V_{DD}=16V ,starting T_J=25℃.
3. Pulse width≤300us;duty cycle≤2%.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25℃. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t ≤ 10s value and the maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design, and the maximum temperature of 150℃ may be used if the PCB allows it.
5. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

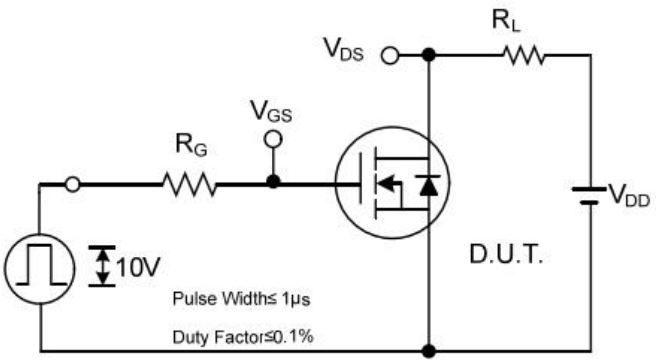
RATINGAND CHARACTERISTIC CURVES



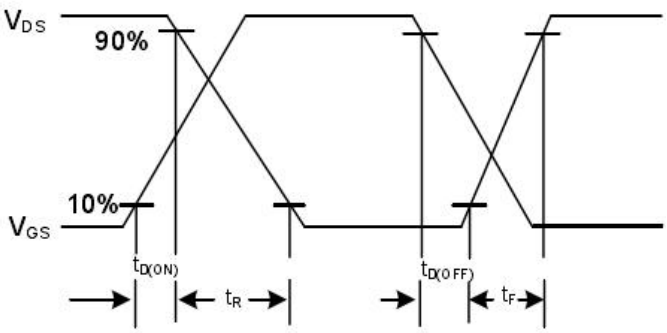
Peak Diode Recovery dv/dt Test Circuit



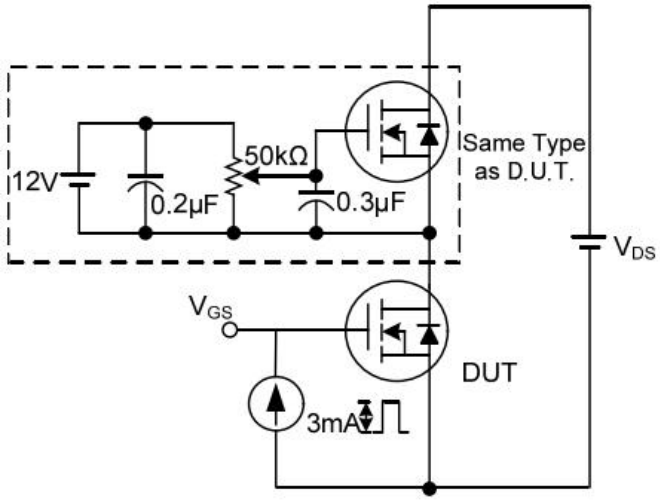
Peak Diode Recovery dv/dt Waveforms



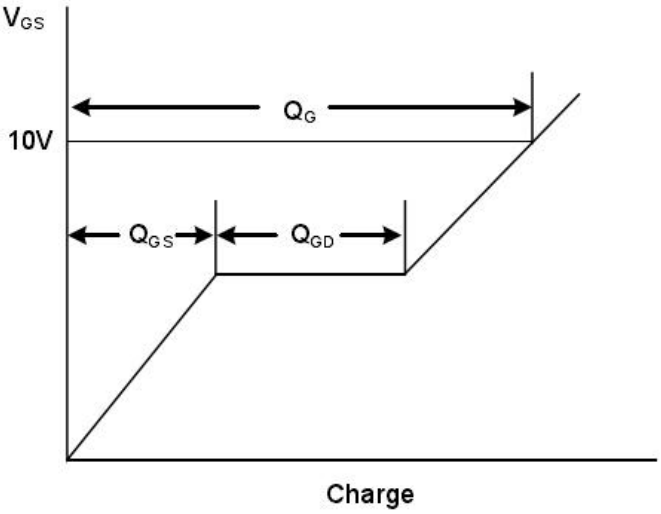
Switching Test Circuit



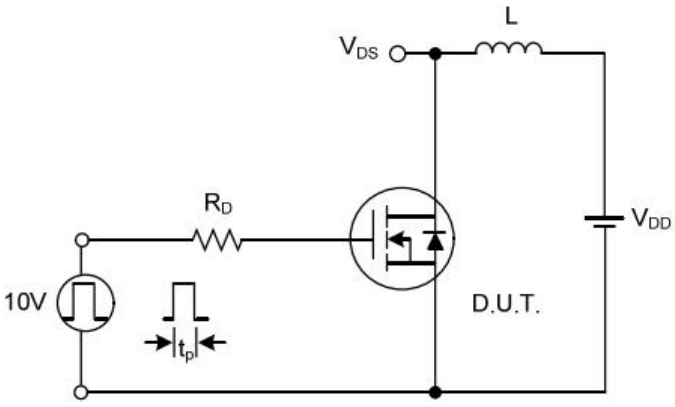
Switching Waveforms



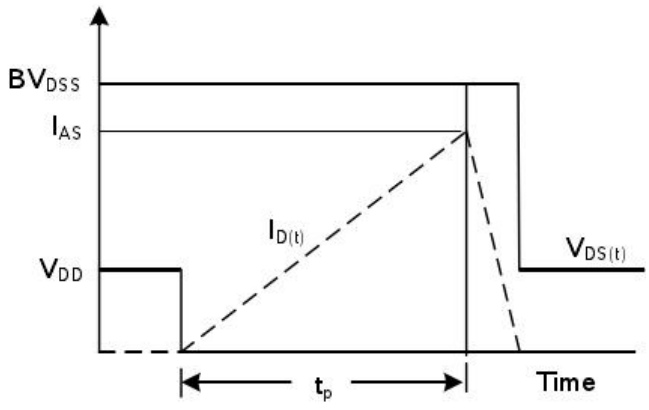
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

RATINGAND CHARACTERISTIC CURVES

Figure.1 Typical Output Characteristics

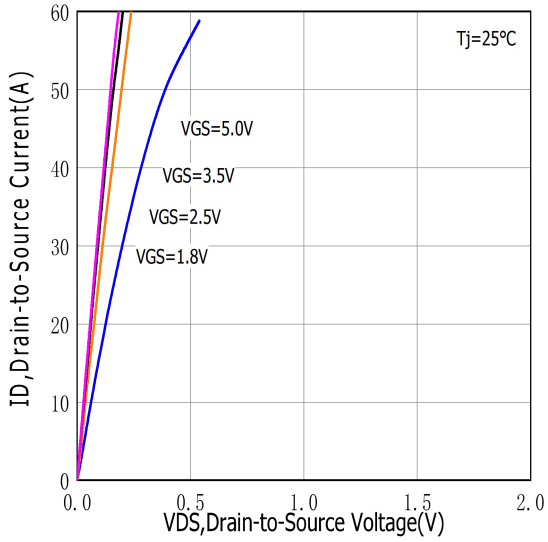


Figure.2 Typical Gate Charge vs Gate to Source Voltage

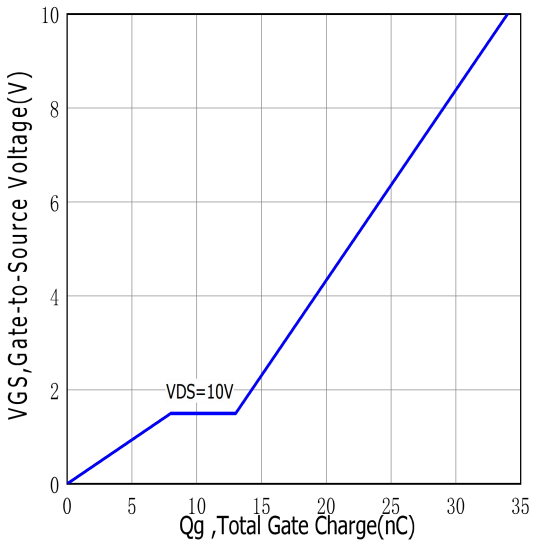


Figure.3 Typical Body Diode Transfer Characteristics

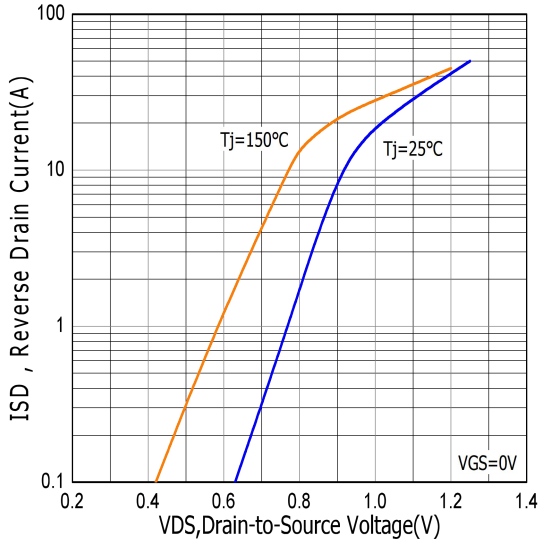


Figure.4 Typical Capacitance vs Drain to Source Voltage

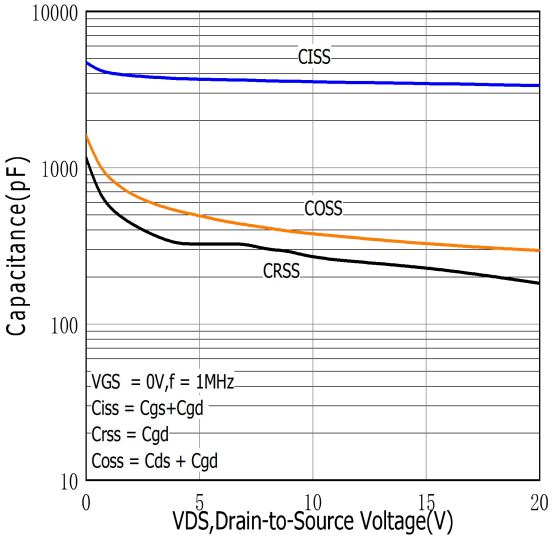


Figure.5 Typical Breakdown Voltage vs Junction Temperature

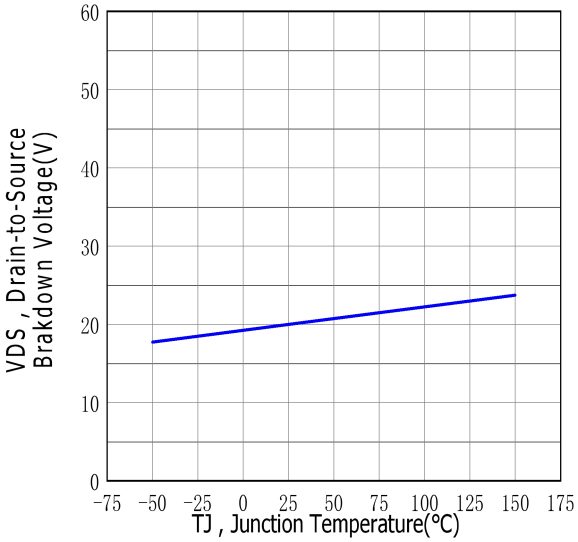


Figure.6 Typical Drian to Source on Resistance vs Junction Temperature

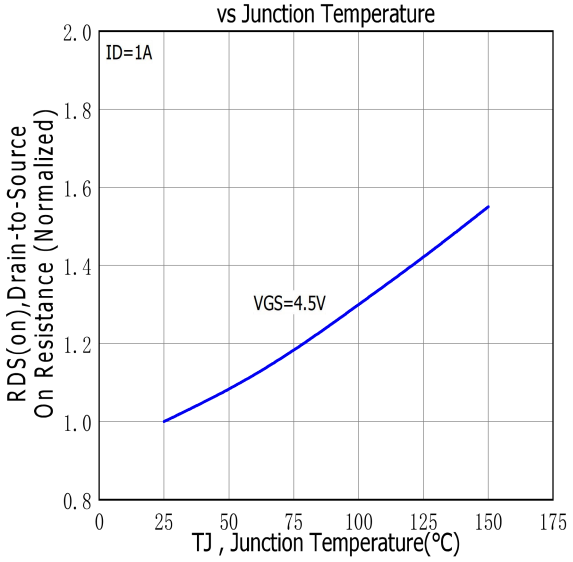


Figure.7 Maximum Forward Bias Safe Operating Area

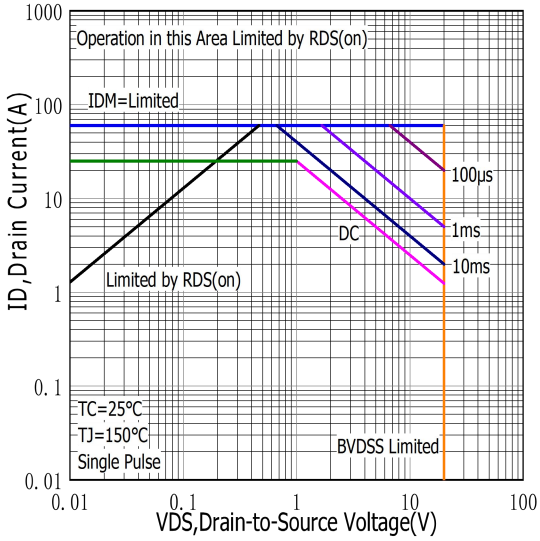


Figure.8 Typical Drain to Source ON Resistance vs Drain Current

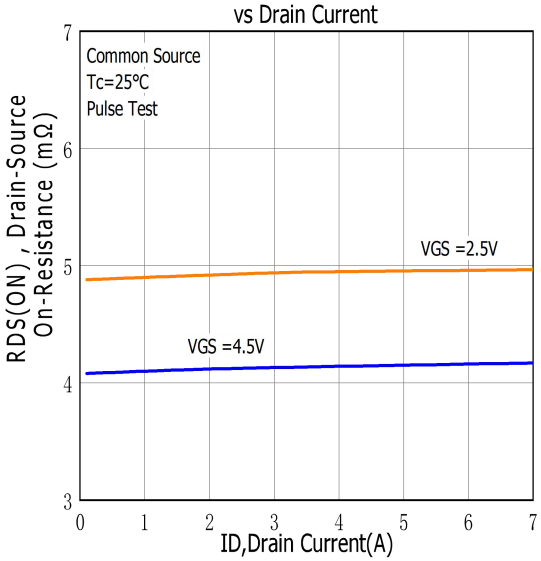


Figure.9 Maximum EAS vs Channel Temperature

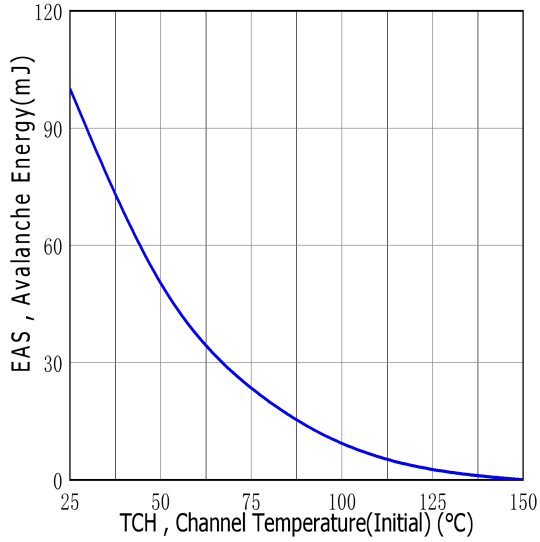


Figure.10 Typical Threshold Voltage vs Case Temperature

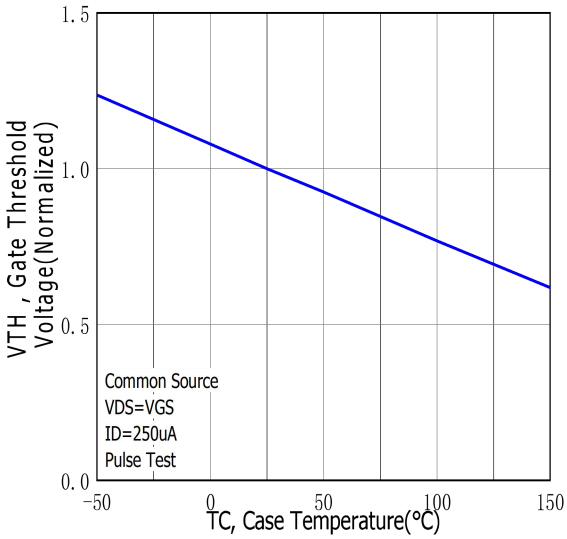


Figure.11 Maximum Effective Thermal Impedance , Junction to Case

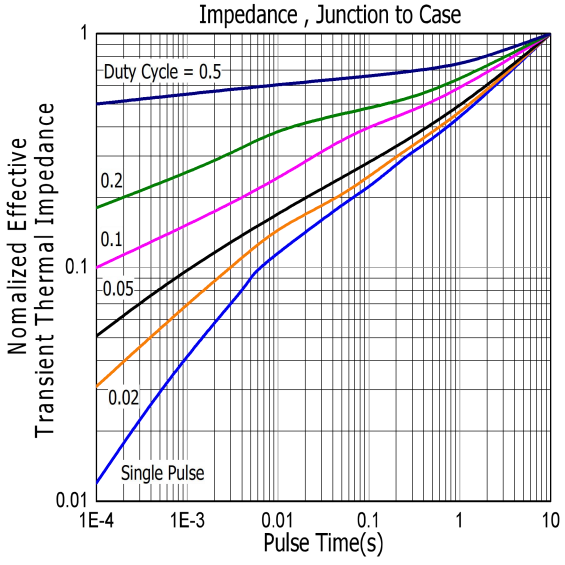
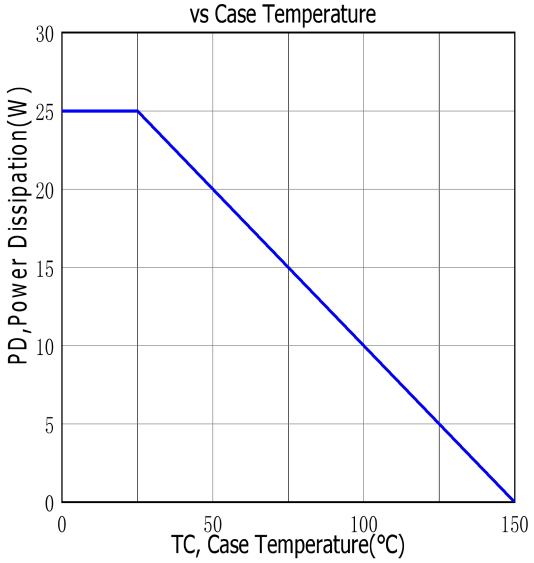


Figure.12 Maximum Power Dissipation vs Case Temperature



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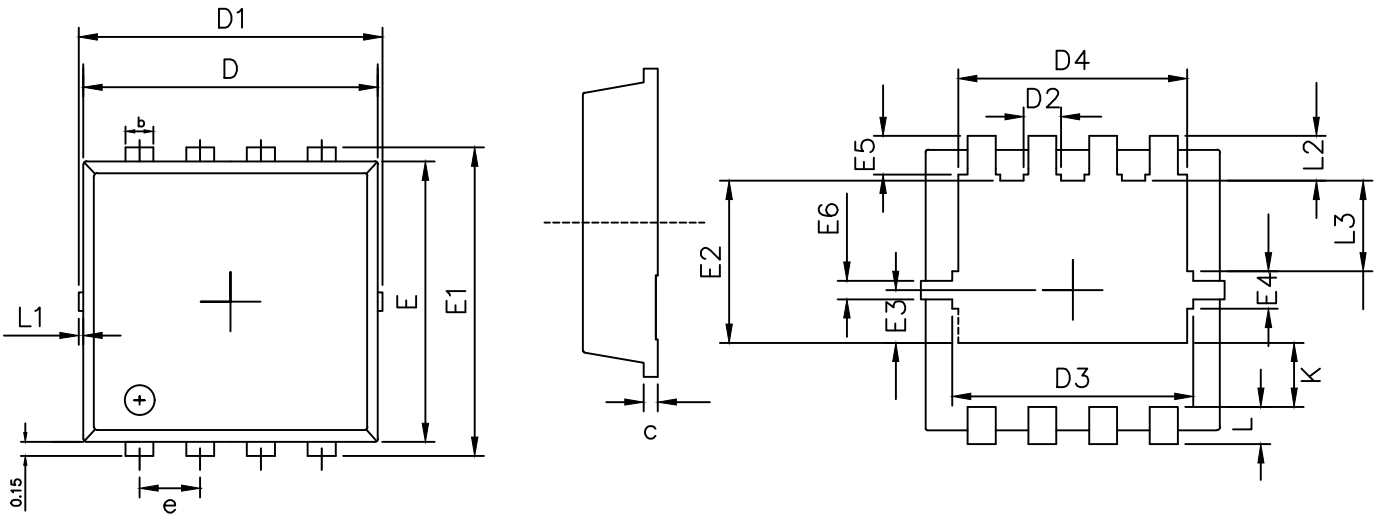
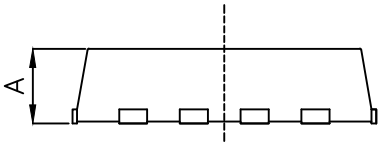
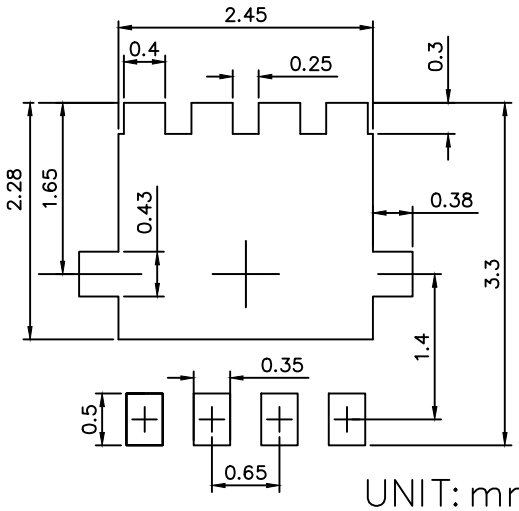
CHONGQING PINGWEI ENTERPRISE CO.,LTD

DFN3x3 PACKAGE OUTLINE





RECOMMENDED LAND PATERN



UNIT: mm

	MIN	NOM	MAX
A	0.70	0.85	1.00
b	0.24	0.30	0.40
c	0.10	0.15	0.25
D	3.00	3.15	3.25
D1	3.10	3.25	3.50
D2	0.30	0.40	0.50
D3	2.50	2.58	2.70
D4	2.35	2.45	2.55
E	2.90	3.00	3.10
E1	3.15	3.30	3.45
E2	1.65	1.75	1.85
E3	0.48	0.58	0.68
E4	0.23	0.40	0.50
E5	0.20	0.30	0.40
E6	0.075	0.17	0.25
e	0.55	0.65	0.75
K	0.52	0.72	0.82
L	0.25	0.40	0.55
L1	0.00	0.05	0.10
L2	0.28	0.43	0.58
L3	0.88	0.98	1.08