

● General Description

The AGM1095MAP combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

This device is ideal for load switch and battery protection applications.

● Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

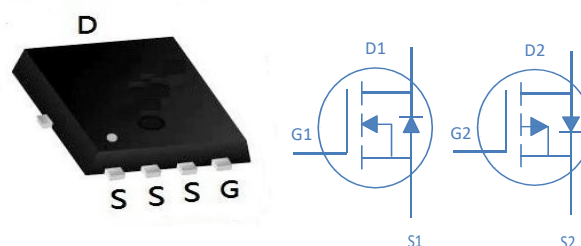
● Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

BVDSS	RDSON	ID
100V	96mΩ	7A
-100V	220mΩ	-6A

PDFN3.3*3.3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM1095MAP	AGM1095MAP	PDFN3.3*3.3	330mm	12mm	5000

Table 1. Absolute Maximum Ratings (TA=25°C)

Symbol	Parameter	Rating		Units
		N-Ch	P-Ch	
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	100	-100	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	±20	±20	V
ID	Drain Current-Continuous($TC=25^{\circ}C$) ^(Note 1)	7.0	-6.0	A
	Drain Current-Continuous($TC=100^{\circ}C$)	4.2	-3.6	A
IDM (pulse)	Drain Current-Continuous@ Current-Pulsed ^(Note 2)	28	-24.5	A
P_D	Total Power Dissipation($TC=25^{\circ}C$)	33.7	32	W
	Total Power Dissipation($TC=100^{\circ}C$)	13.5	12.8	W
EAS	Avalanche energy ^(Note 3)	90	110	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) ¹	50	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	3.7	3.9	°C/W

Table 3. N- Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.0	--	2.1	V
gFS	Forward Transconductance	VDS=5V,ID=3A	--	7	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=6A	--	96	120	mΩ
		VGS=4.5V, ID=3A	--	100	140	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	999	--	pF
Coss	Output Capacitance		--	46	--	pF
Crss	Reverse Transfer Capacitance		--	32	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=30V, RL=15Ω,RGEN=2.5Ω	--	50	--	nS
tr	Turn-on Rise Time		--	2.9	--	nS
td(off)	Turn-Off Delay Time		--	17.3	--	nS
tf	Turn-Off Fall Time		--	2.8	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=30V, ID=3A	--	25.4	--	nC
Qgs	Gate-Source Charge		--	4.2	--	nC
Qgd	Gate-Drain Charge		--	4.3	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	7.0	A
VSD	Forward on Voltage	VGS=0V,IS=6A	--	--	1.2	V
trr	Reverse Recovery Time	IF=6A , di/dt=100A/μs ,	--	--	--	ns
Qrr	Reverse Recovery Charge	TJ=25°C	--	--	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: T_J=25°C

Table 3. P-Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-100V, VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-1.2	-1.6	-2.1	V
gFS	Forward Transconductance	VDS=-5V, ID=-3A	--	7	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-6A	--	220	250	mΩ
		VGS=-4.5V, ID=-3A	--	225	250	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-50V, VGS=0V, F=1MHZ	--	1600	--	pF
Coss	Output Capacitance		--	86	--	pF
Crss	Reverse Transfer Capacitance		--	40	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V, f=1.0MHz	--	1.2	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-50V, ID=-10A, RGEN=3.3Ω	--	12	--	nS
tr	Turn-on Rise Time		--	152	--	nS
td(off)	Turn-Off Delay Time		--	28	--	nS
tf	Turn-Off Fall Time		--	38	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-50V, ID=-4A	--	33	--	nC
Qgs	Gate-Source Charge		--	4.3	--	nC
Qgd	Gate-Drain Charge		--	7.2	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-6.0	A
VSD	Forward on Voltage	VGS=0V, IS=-6A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-6A , dI/dt=100A/μs , TJ=25°C	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	nc

Notes 1. The maximum current rating is package limited.

Notes 2. Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3. EAS condition: T_J=25°C

N- Channel 100V MOSFET

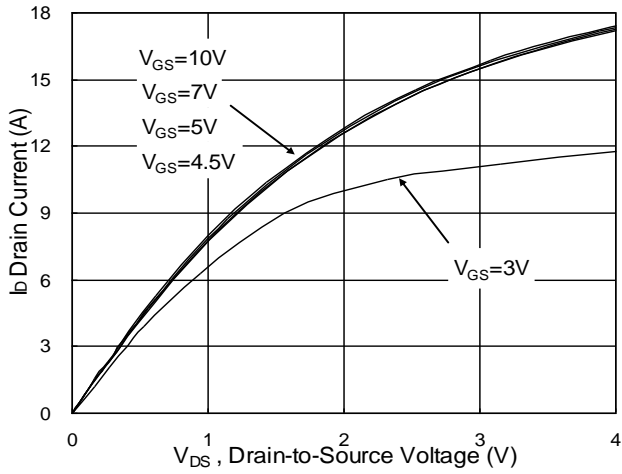


Fig.1 Typical Output Characteristics

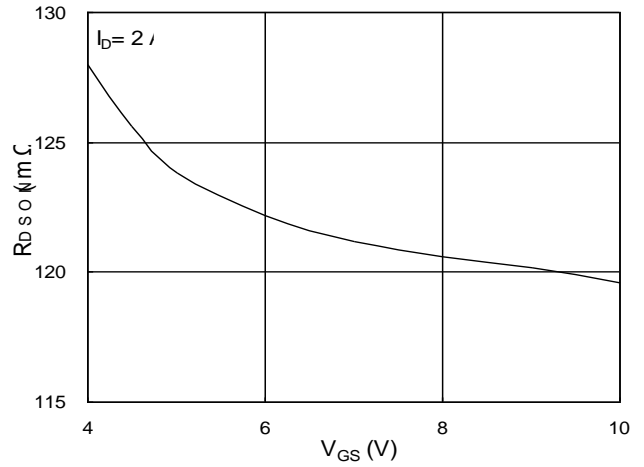


Fig.2 On-Resistance vs. Gate-Source

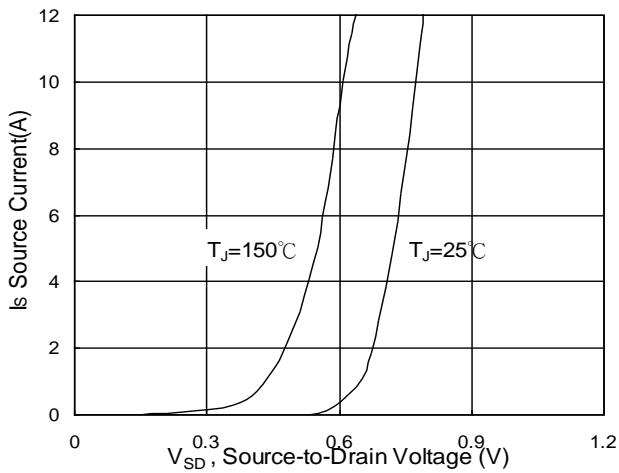


Fig.3 Forward Characteristics Of Reverse

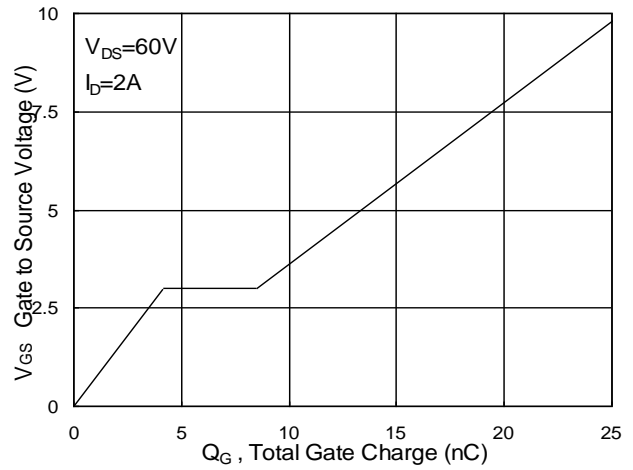
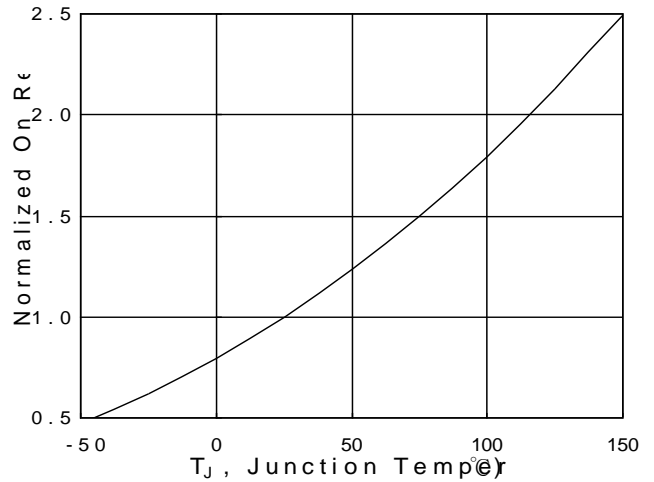
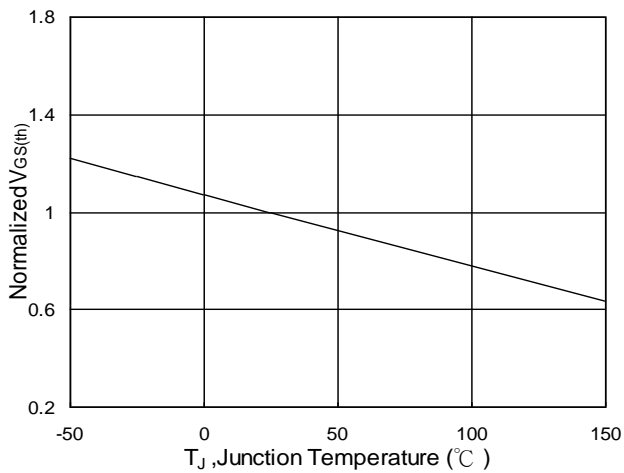


Fig.4 Gate-Charge Characteristics



N- Channel 100V MOSFET

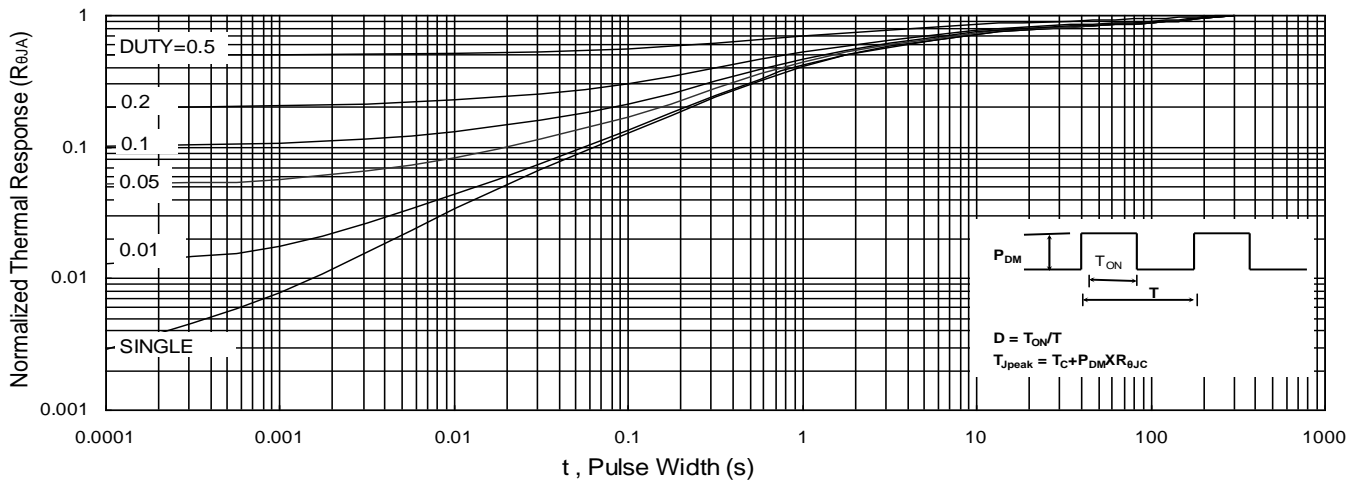
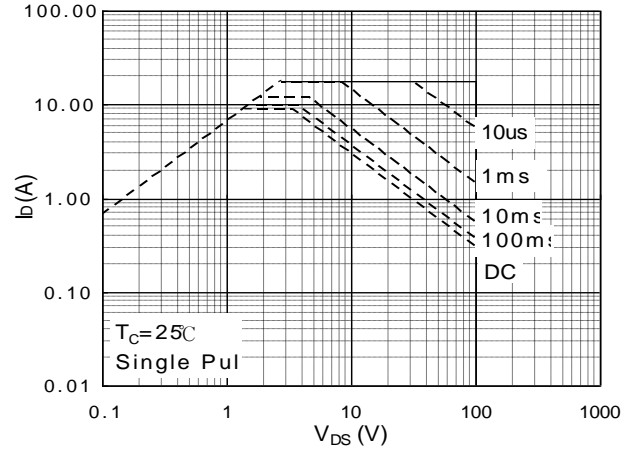
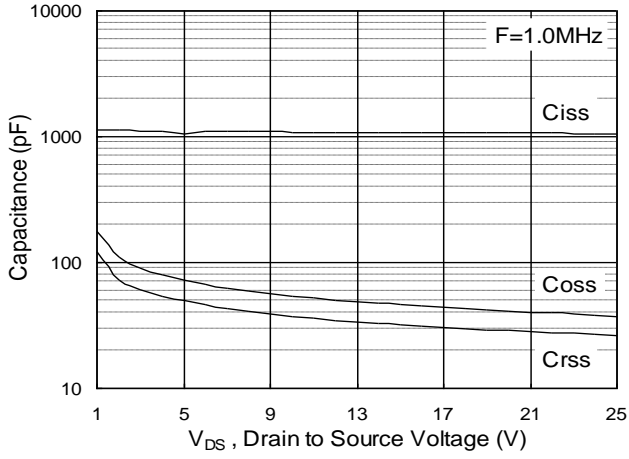
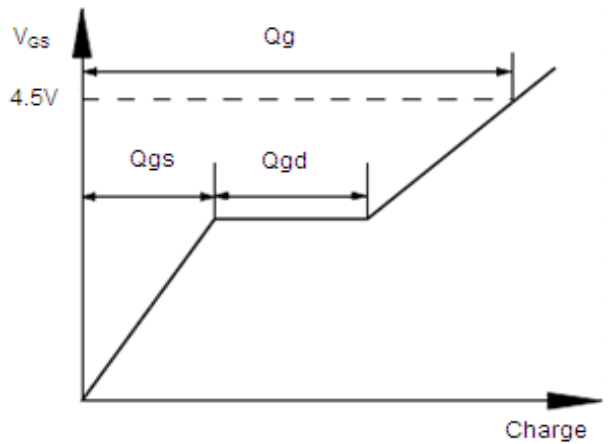
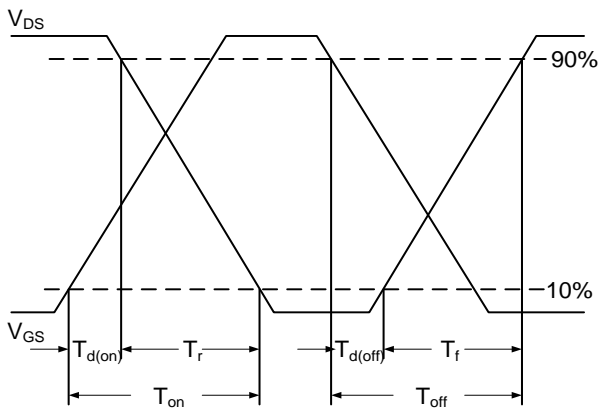
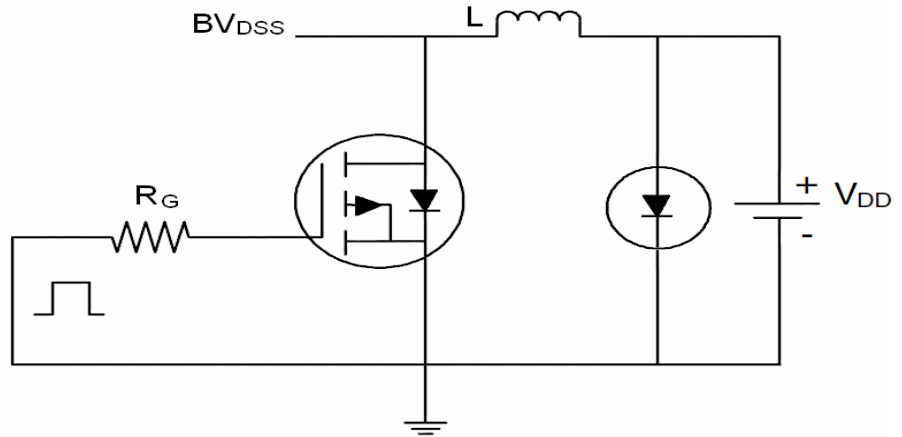
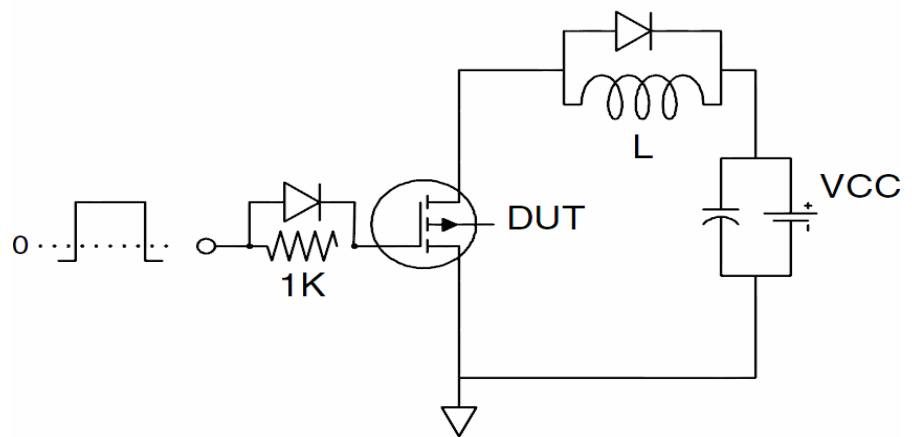
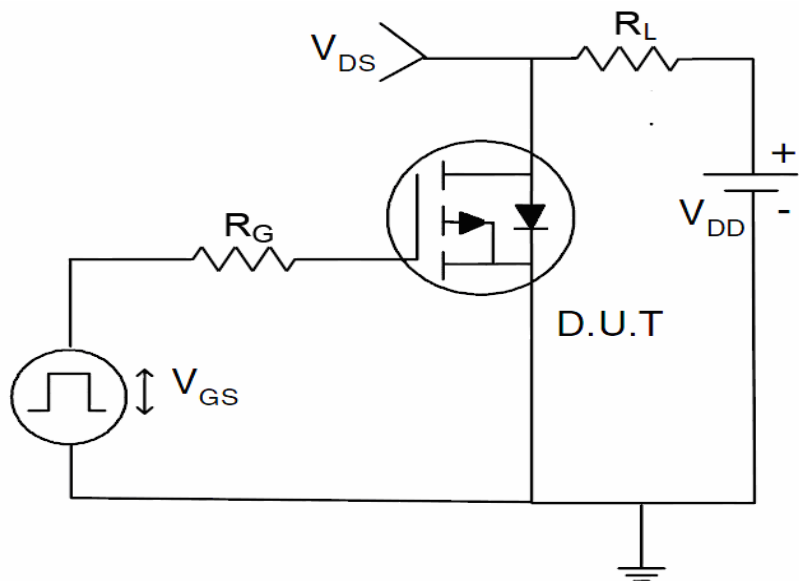


Fig.9 Normalized Maximum Transient Thermal Impedance



P- Channel 100V MOSFET
Test Circuit
1) E_{AS} Test Circuit

2) Gate Charge Test Circuit

3) Switch Time Test Circuit


P- Channel 100V MOSFET

Typical Electrical and Thermal Characteristics (Curves)

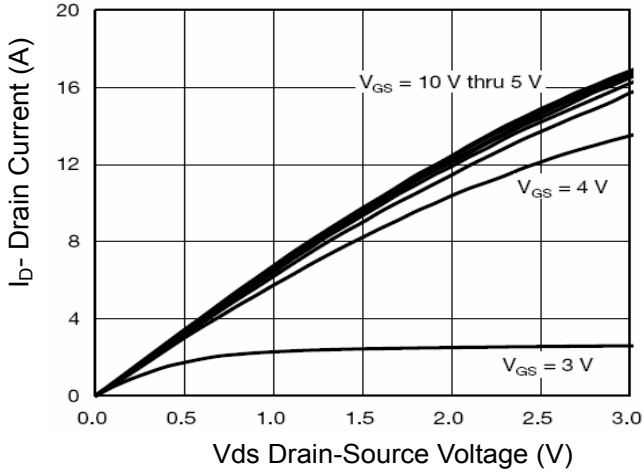


Figure 1 Output Characteristics

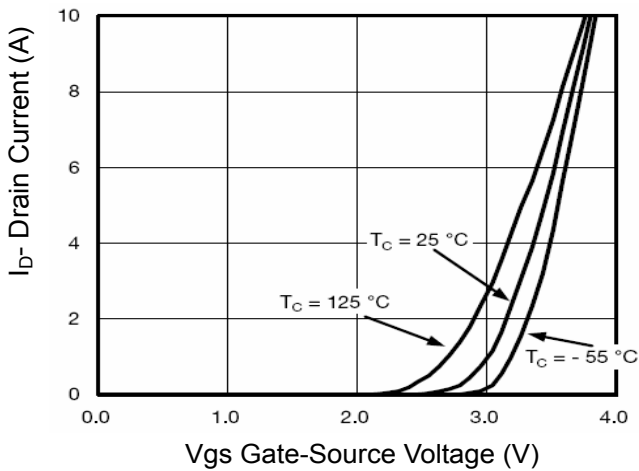


Figure 2 Transfer Characteristics

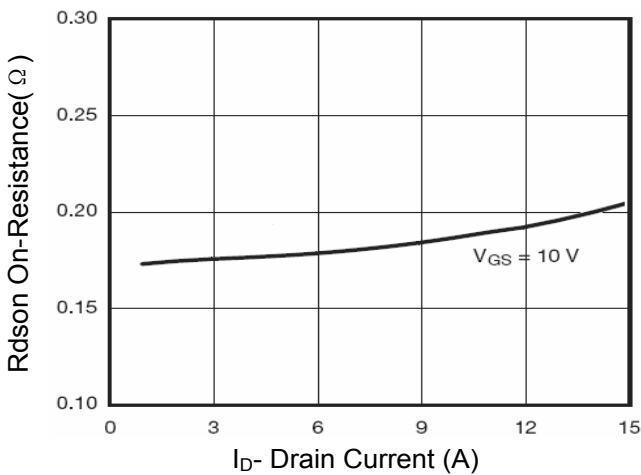


Figure 3 Rdson- Drain Current

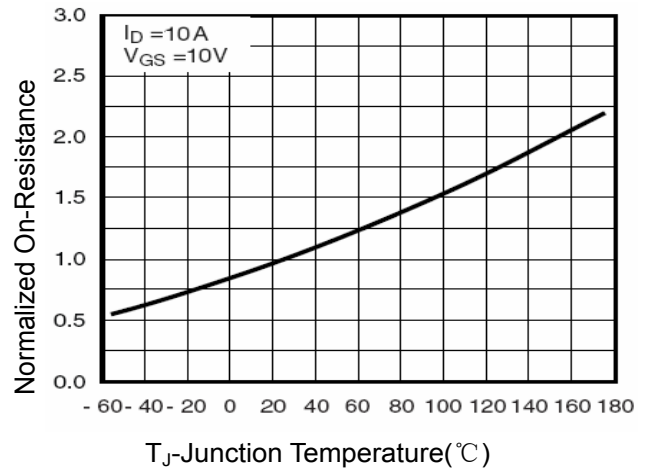


Figure 4 Rdson-Junction Temperature

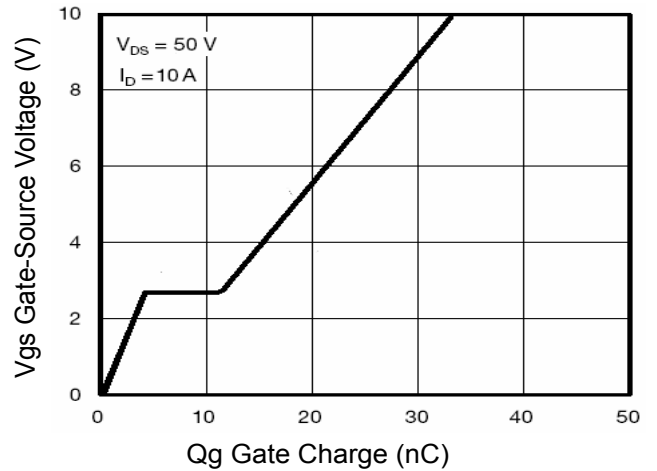


Figure 5 Gate Charge

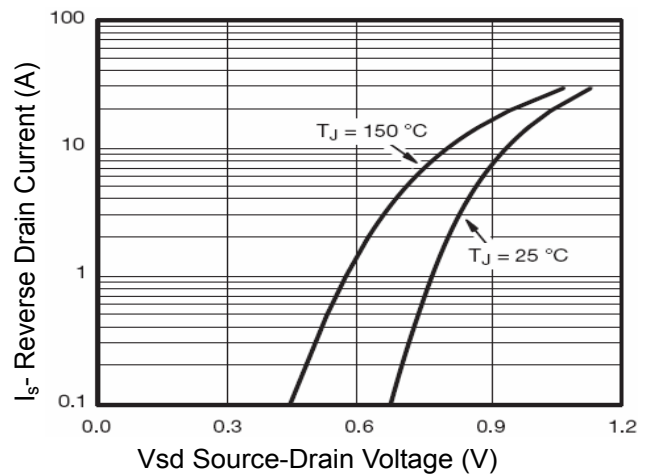


Figure 6 Source- Drain Diode Forward

P- Channel 100V MOSFET

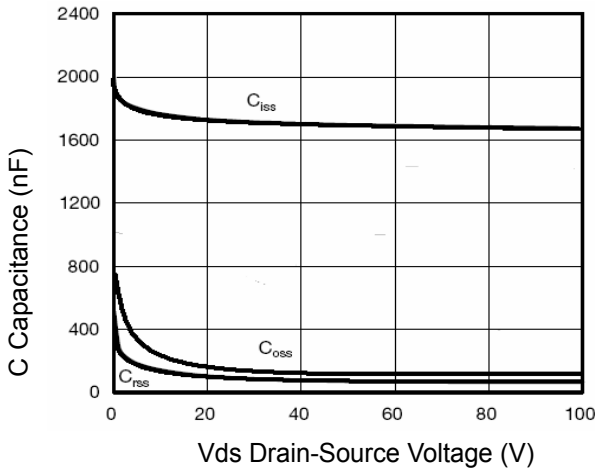


Figure 7 Capacitance vs Vds

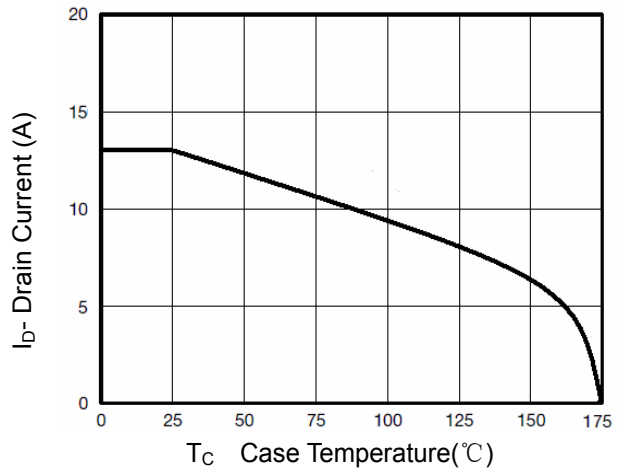


Figure 9 Drain Current vs Case Temperature

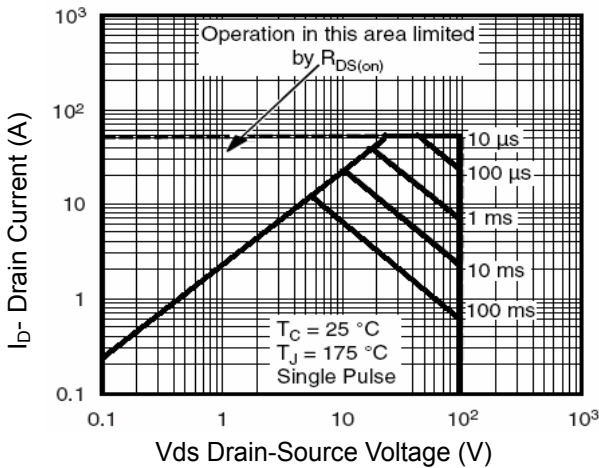


Figure 8 Safe Operation Area

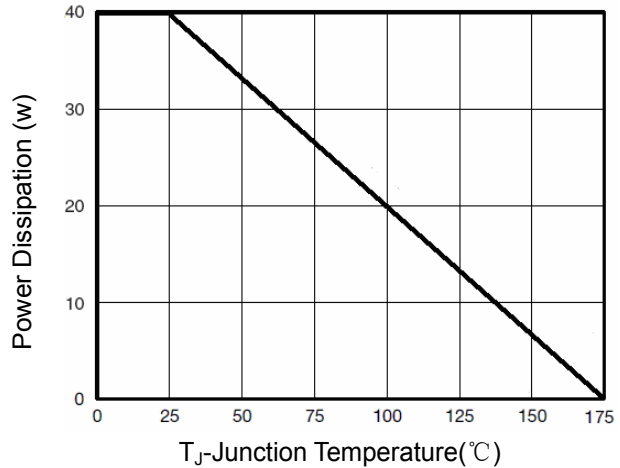


Figure 10 Power De-rating

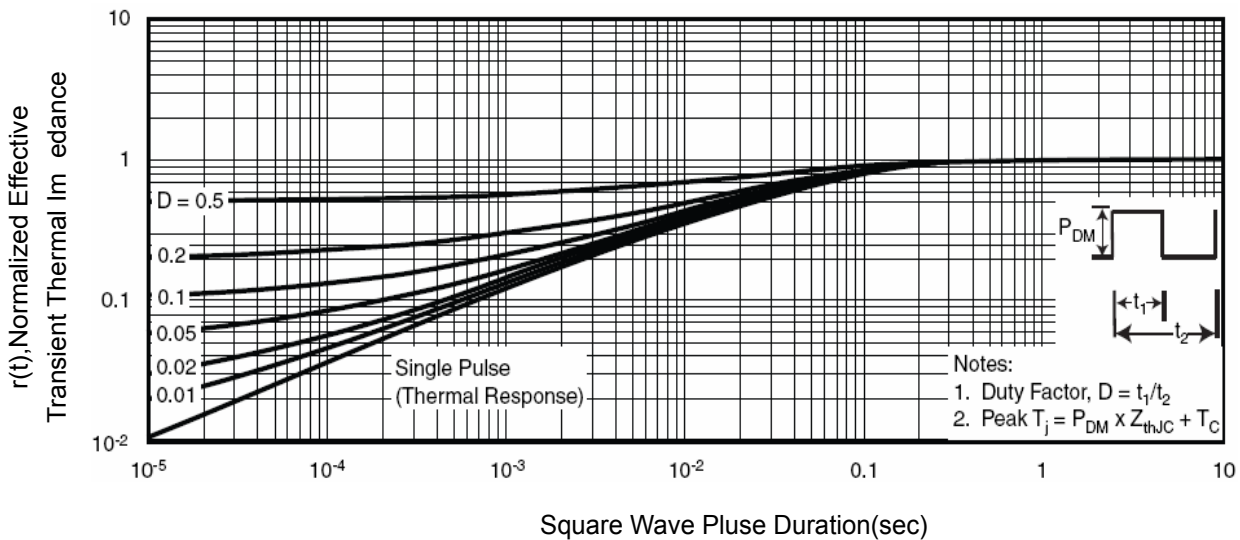
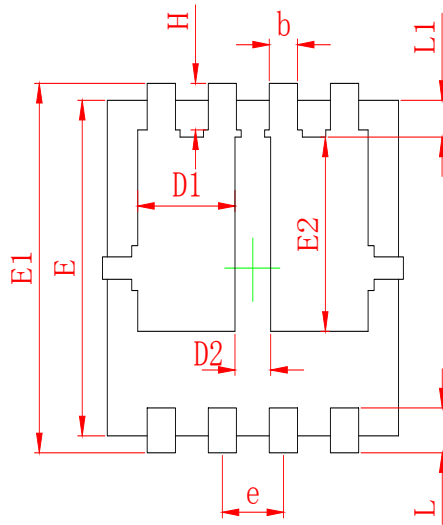
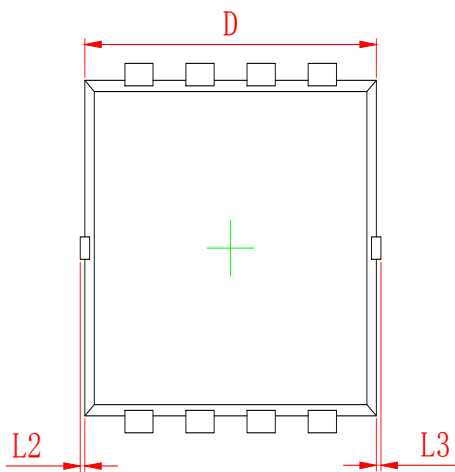
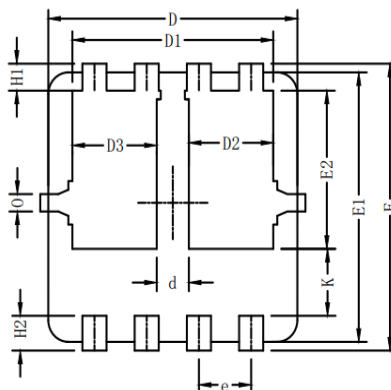
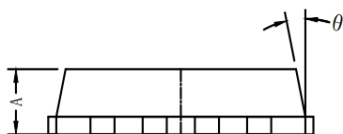
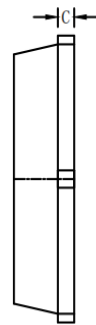
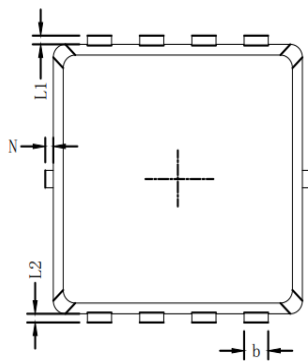
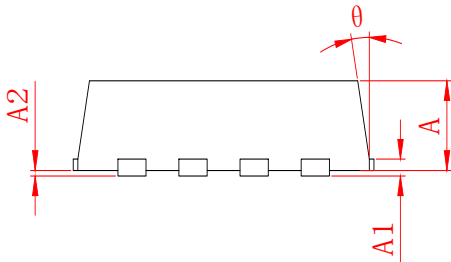


Figure 11 Normalized Maximum Transient Thermal Impedance

●Dimensions (PDFN3.3×3.3)


SYMBOL	MILLIMETER	
	MIN	MAX
A	0.700	0.900
A1	0.152 REF.	
A2	0 [±] 0.05	
D	3.000	3.200
D1	0.935	1.135
D2	0.280	0.480
E	2.900	3.100
E1	3.150	3.450
E2	1.535	1.935
b	0.200	0.400
e	0.550	0.750
L	0.300	0.500
L1	0.180	0.480
L2	0 [±] 0.100	
L3	0 [±] 0.100	
H	0.315	0.515
θ	8°	12°



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
c	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
D2/D3	1.00	1.05	1.10
d	0.30	0.40	0.50
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.72	1.82	1.92
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.67	0.77	0.87
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
o	0.2 REF.		


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