AS4612S

N and P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	60mΩ@10V	5A

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	85mΩ@-10V	-4A

Feature

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- Surface mount package

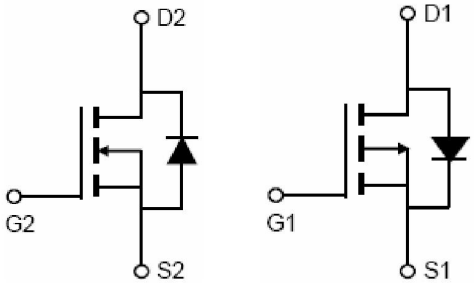
Application

- H-bridge
- DC/DC Converter
- Inverters

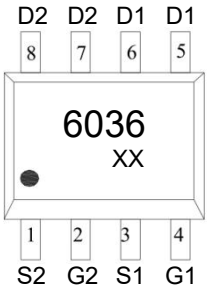
Package

SOP-8

Circuit diagram



Marking



AS4612S

N and P-Channel Enhancement Mode MOSFET

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	N-Channel	p-Channel	Unit
Drain-Source Voltage	V_{DS}	60	-60	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current	I_D	5	-4	A
Pulsed Drain Current	I_{DM}	17	-14	A
Power Dissipation	P_D	2	2	W
Junction Temperature	T_J	150	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	℃

N-CH Electrical characteristics (T_A=25 ºC, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0		3.0	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =10V, I_D =5A			60	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		450		pF
Output Capacitance	C_{oss}			61		
Reverse Transfer Capacitance	C_{rss}			27		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =5A		10		nC
Gate-Source Charge	Q_{gs}			2.4		
Gate-Drain Charge	Q_{gd}			3.6		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V R_L=2.5Ω,R_{GEN}=3Ω		4.2		nS
Turn-on rise time	t_r			3.4		
Turn-off delay time	$t_{d(off)}$			16		
Turn-off fall time	t_f			2		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				5	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=5A			1.2	V

P-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-60V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0		-3.0	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-3.5A			85	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-30V,V_{GS} =0V,f =1MHz		960		pF
Output Capacitance	C_{oss}			86		
Reverse Transfer Capacitance	C_{rss}			38		
Total Gate Charge	Q_g	V_{DS} =-30V,V_{GS} =-10V, I_D =-4A		16		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			3.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V,V_{GS}=-10V, R_L=2.5Ω,R_{GEN}=3Ω		9		nS
Turn-on rise time	t_r			10		
Turn-off delay time	$t_{d(off)}$			25		
Turn-off fall time	t_f			11		
Source-Drain Diode characteristics						
Diode Forward Current[1)]	I_S				-4	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=-4A			-1.2	V

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

N- Channel Typical Characteristics

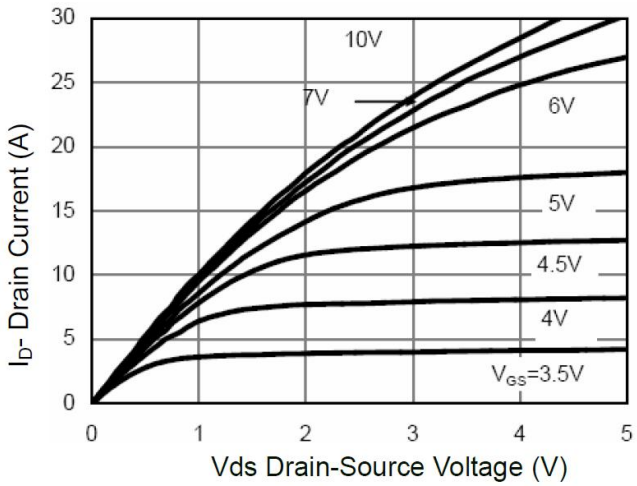


Figure 1 Output Characteristics

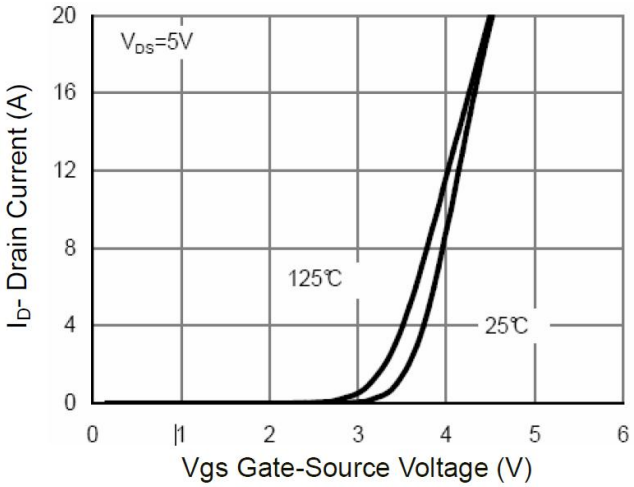


Figure 2 Transfer Characteristics

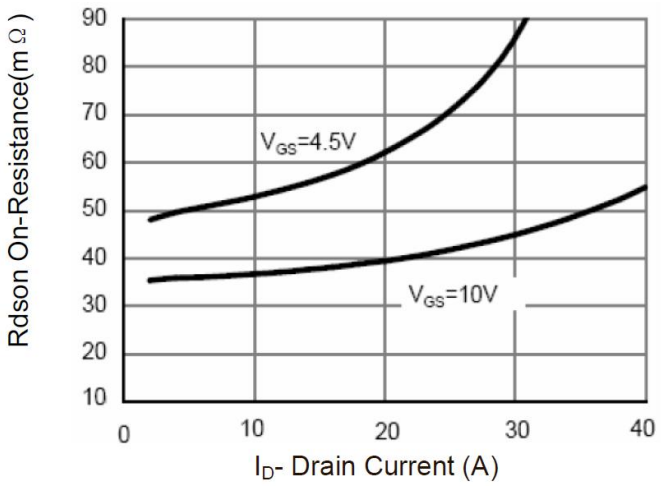


Figure 3 Rdson- Drain Current

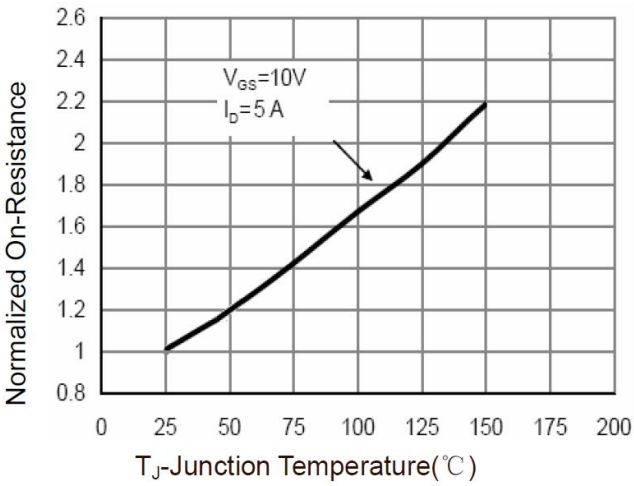


Figure 4 Rdson-Junction Temperature

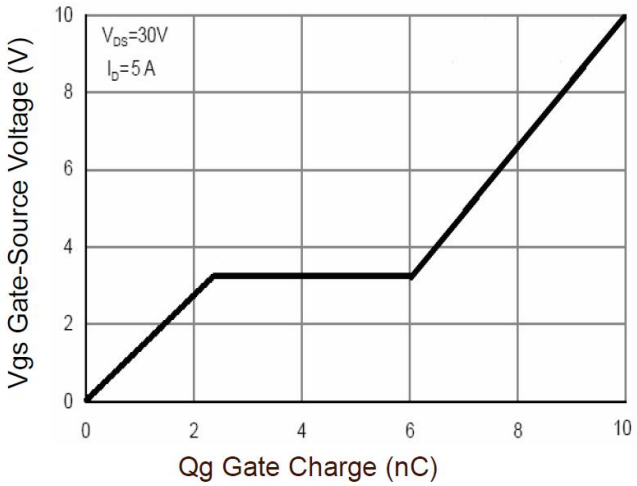


Figure 5 Gate Charge

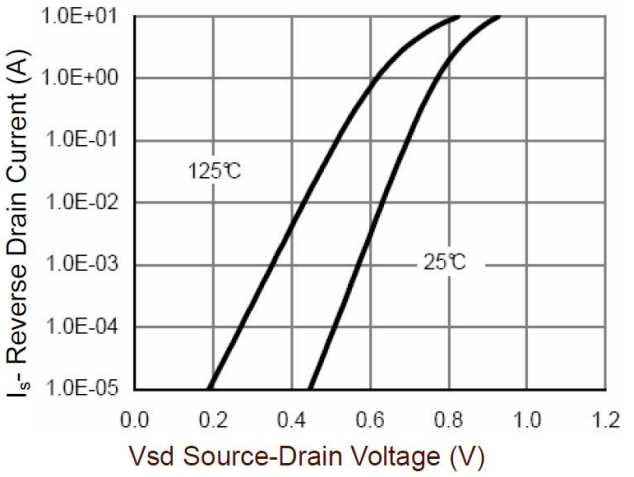


Figure 6 Source- Drain Diode Forward

N- Channel Typical Characteristics

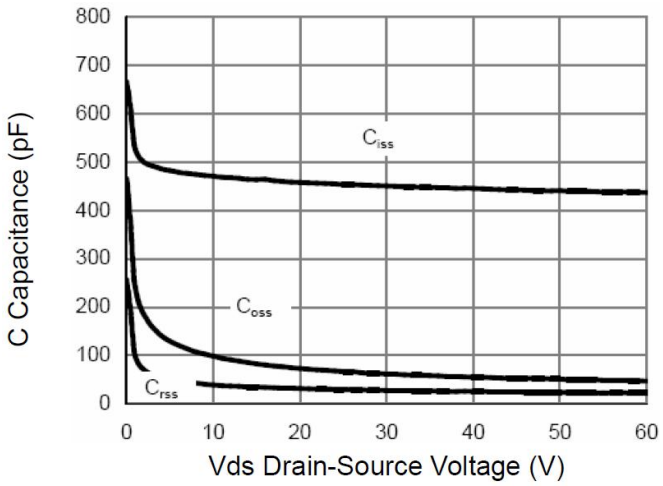


Figure 7 Capacitance vs Vds

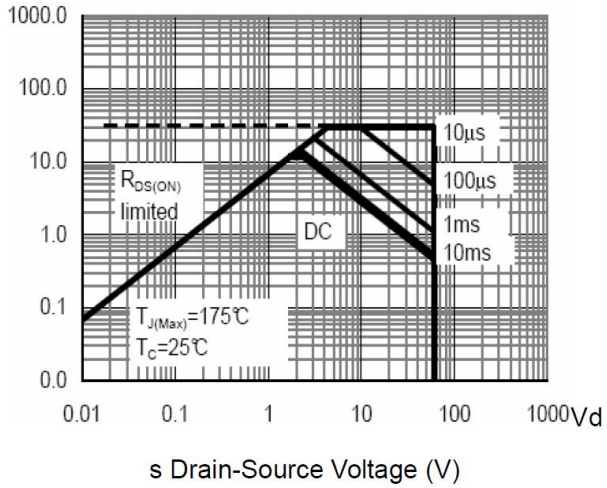


Figure 8 Safe Operation Area

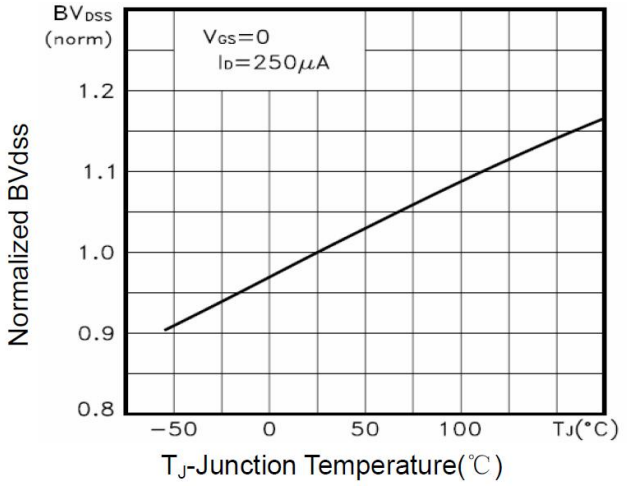


Figure 9 BV_{DSS} vs Junction Temperature

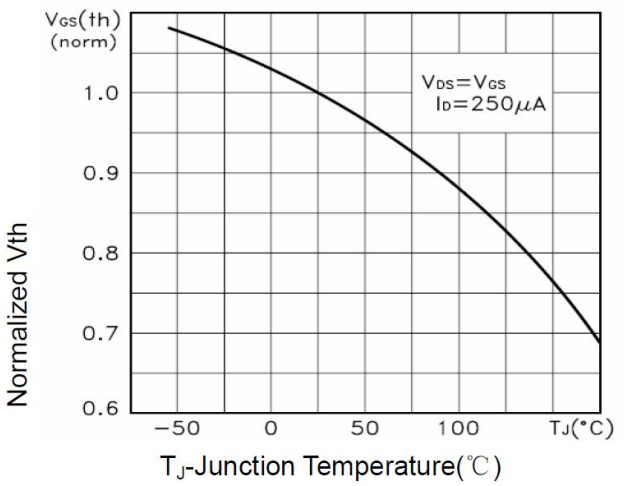


Figure 10 $V_{GS(th)}$ vs Junction Temperature

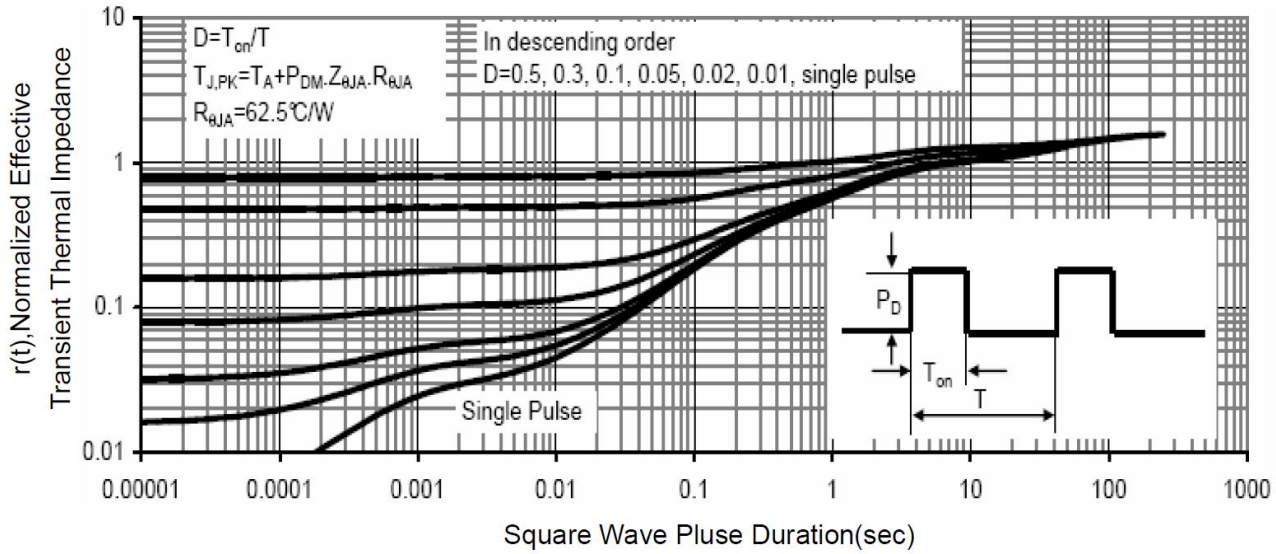


Figure 11 Normalized Maximum Transient Thermal Impedance

P- Channel Typical Characteristics

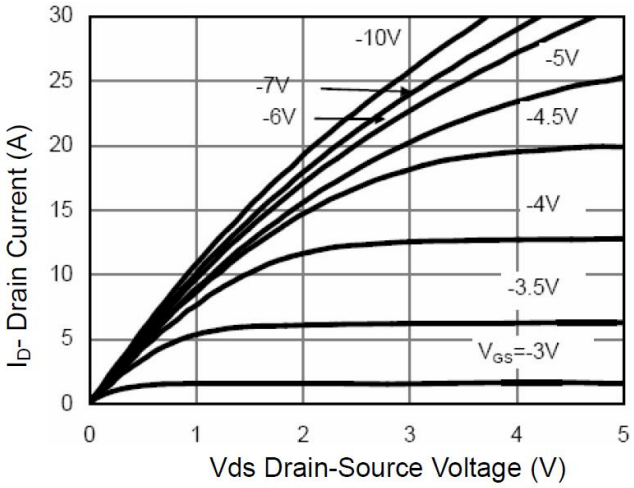


Figure 1 Output Characteristics

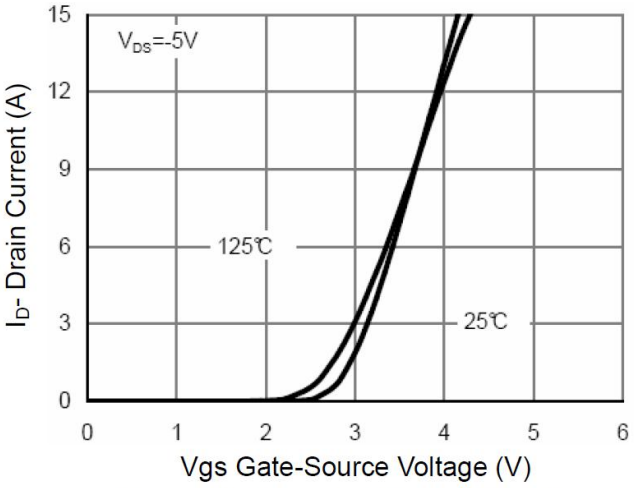


Figure 2 Transfer Characteristics

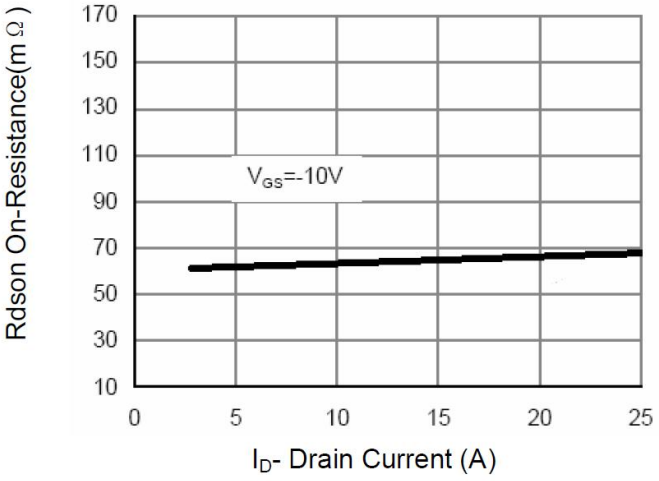


Figure 3 Rdson- Drain Current

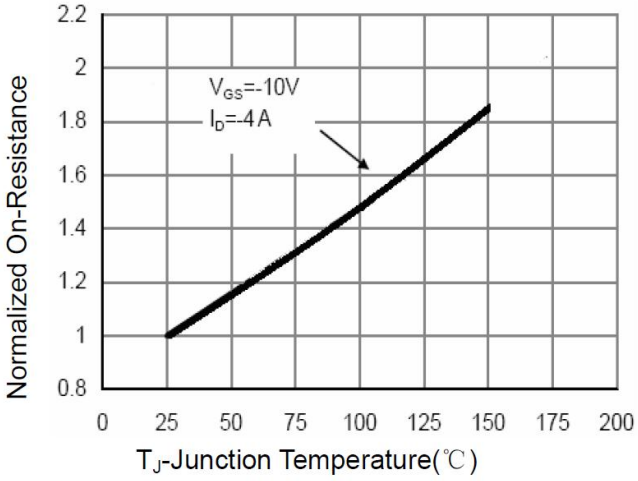


Figure 4 Rdson-Junction Temperature

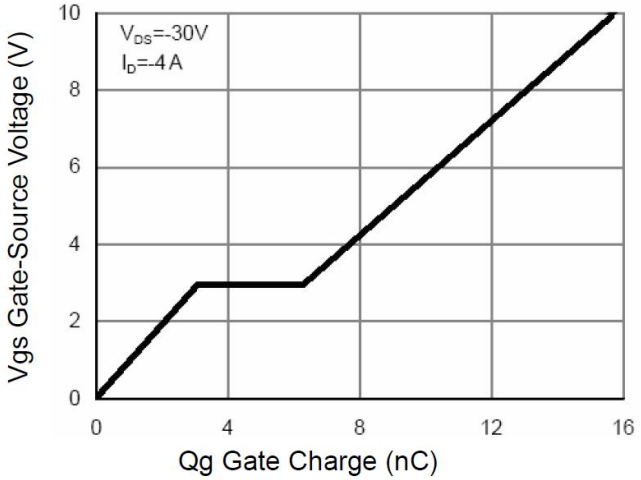


Figure 5 Gate Charge

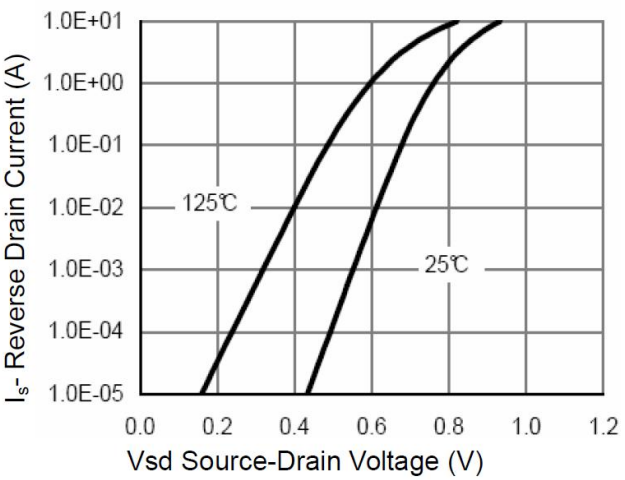
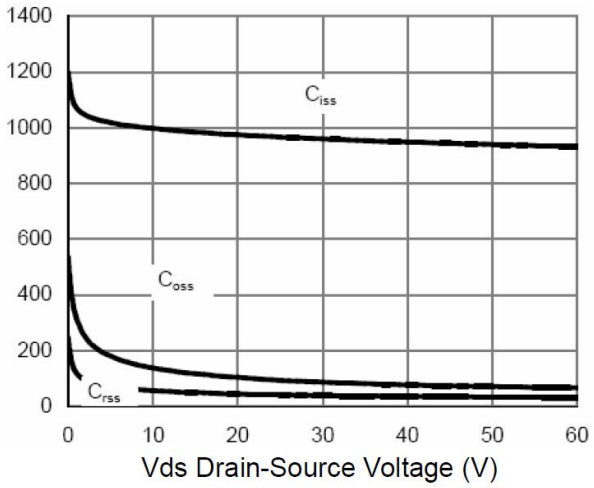


Figure 6 Source- Drain Diode Forward

P- Channel Typical Characteristics



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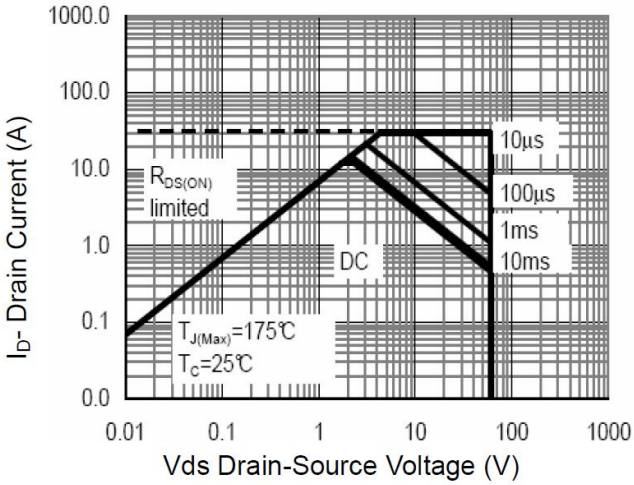

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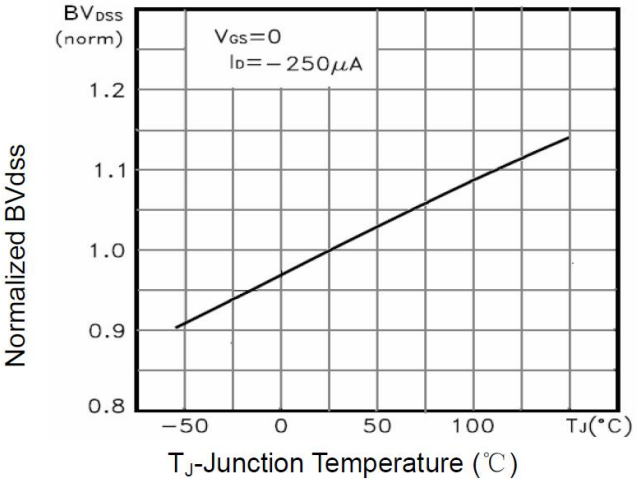

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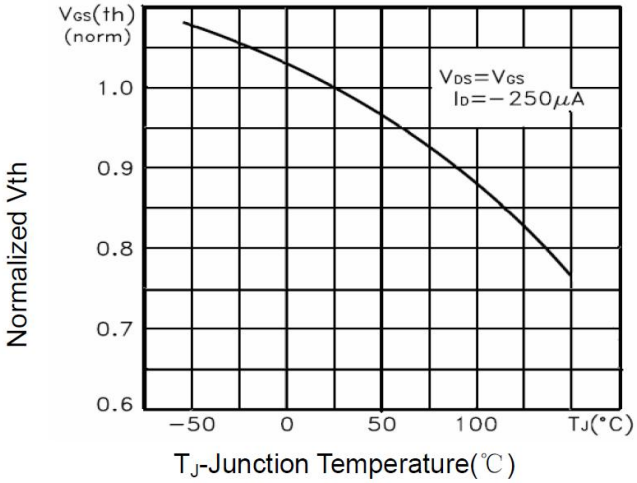


Figure 10 $V_{GS(th)}$ vs Junction Temperature

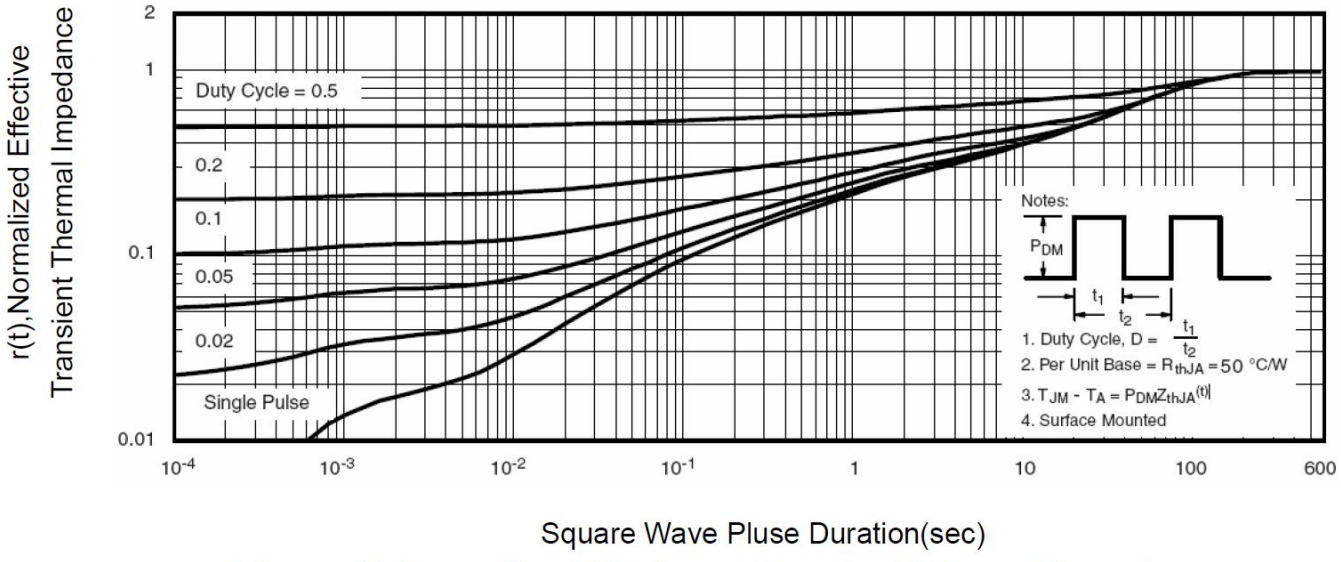
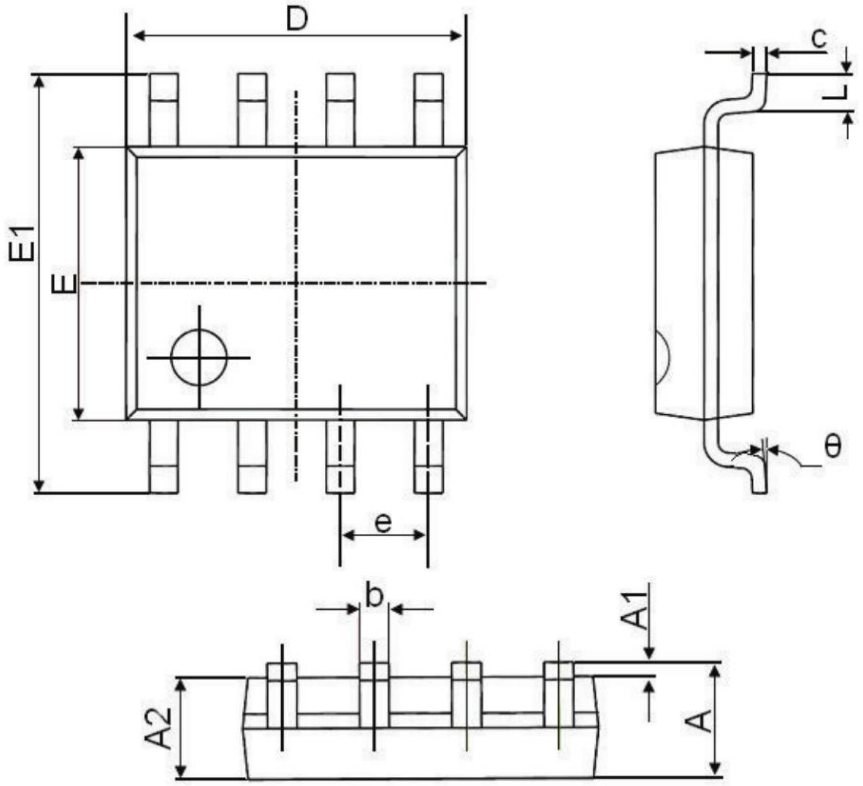


Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°