

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	19mΩ@10V	8A
	29mΩ@4.5V	

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-40V	35mΩ@-10V	-7A
	45mΩ@4.5V	

Feature

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

Application

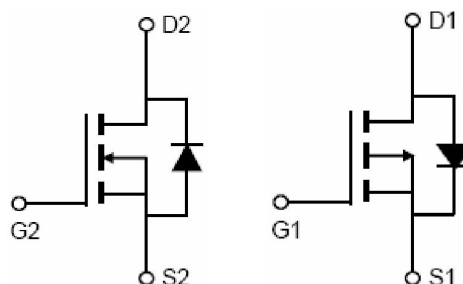
- H-bridge
- DC/DC Converter
- Inverters

Package

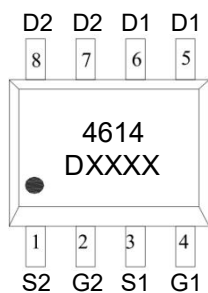


SOP-8

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	N-Channel	p-Channel	Unit
Drain-Source Voltage	V_{DS}	40	-40	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	8	-7	A
Pulsed Drain Current	I_{DM}	40	-30	A
Power Dissipation	P_D	2	2	W
Junction Temperature	T_J	150	150	°C
Thermal Resistance, Junction-to-Ambient ¹⁾	$R_{\theta JA}$	62.5	62.5	°C/W
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	°C

N-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	40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =40V,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	1.5	2.0	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =10V, I _D =8A		14	19	mΩ
		V _{GS} =4.5V, I _D =4A		19	29	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f =1MHz		415		pF
Output Capacitance	C _{oss}			112		
Reverse Transfer Capacitance	C _{rss}			11		
Total Gate Charge	Q _g	V _{DS} =20V,V _{GS} =10V,I _D =8A		12		nC
Gate-Source Charge	Q _{gs}			3.2		
Gate-Drain Charge	Q _{gd}			3.1		
Turn-on delay time	t _{d(on)}	V _{DD} =20V,V _{GS} =10V R _L =2.5Ω,R _{GEN} =3Ω		4		nS
Turn-on rise time	t _r			3		
Turn-off delay time	t _{d(off)}			15		
Turn-off fall time	t _f			2		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =8A			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	-40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-40V,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	-1.5	-2.0	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =-10V, I _D =-8A		29	35	mΩ
		V _{GS} =-4.5V, I _D =-4A		34	45	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =-20V,V _{GS} =0V,f =1MHz		520		pF
Output Capacitance	C _{oss}			100		
Reverse Transfer Capacitance	C _{rss}			65		
Total Gate Charge	Q _g	V _{DS} =-20V,V _{GS} =-10V, I _D =-8A		13		nC
Gate-Source Charge	Q _{gs}			3.8		
Gate-Drain Charge	Q _{gd}			3.1		
Turn-on delay time	t _{d(on)}	V _{DD} =-20V,V _{GS} =-10V, R _L =2.3Ω,R _{GEN} =6Ω		7.5		nS
Turn-on rise time	t _r			5.5		
Turn-off delay time	t _{d(off)}			19		
Turn-off fall time	t _f			7		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =-7A			-1.2	V

Notes:

- 1) Surface Mounted on FR4 Board, t_s ≤ 10 sec.
- 2) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤ 2%.
- 3) Guaranteed by design, not subject to production testing.

N- Channel Typical Characteristics

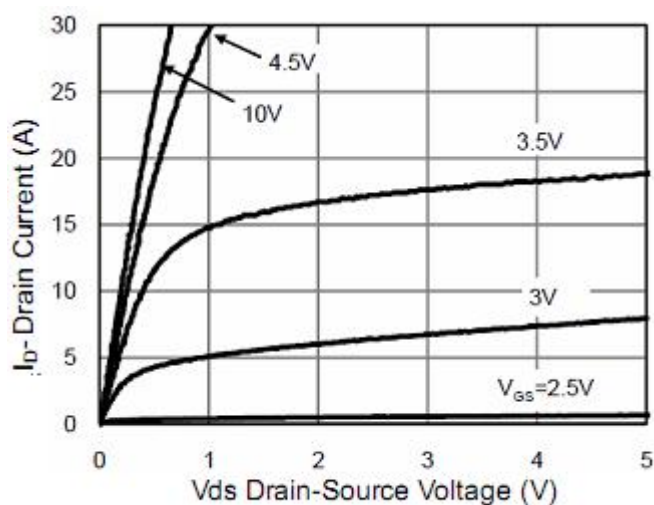


Figure1 Output Characteristics

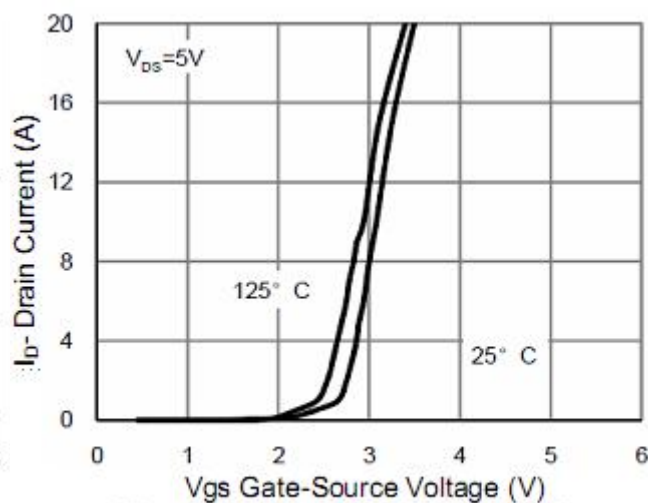


Figure2 Transfer Characteristics

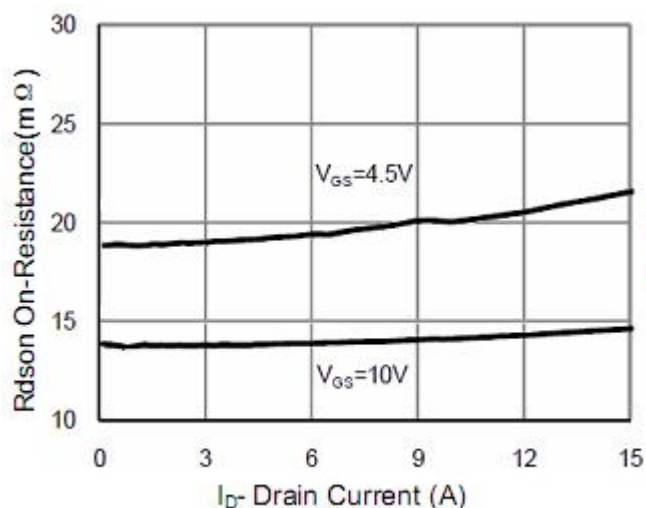


Figure 3 Drain-Source On-Resistance

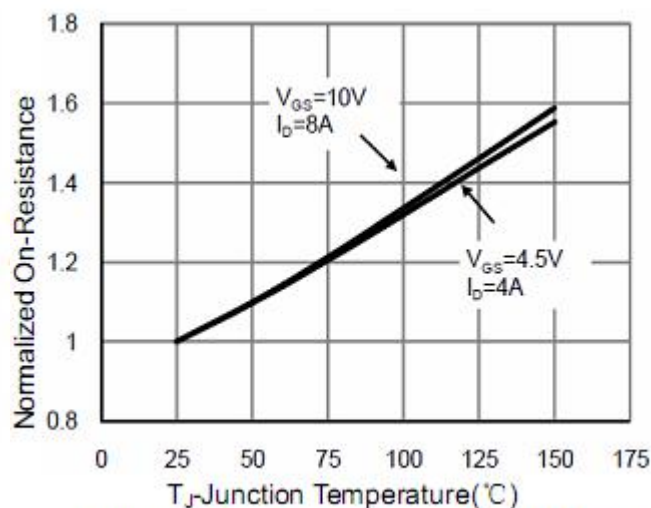


Figure4 Drain-Source On-Resistance

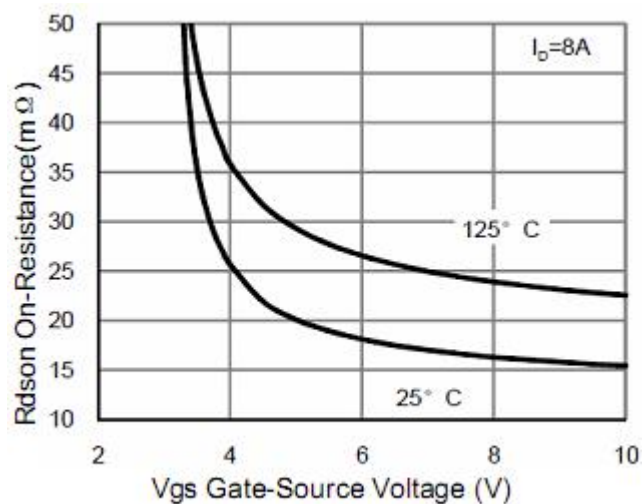


Figure5 Rdson vs Vgs

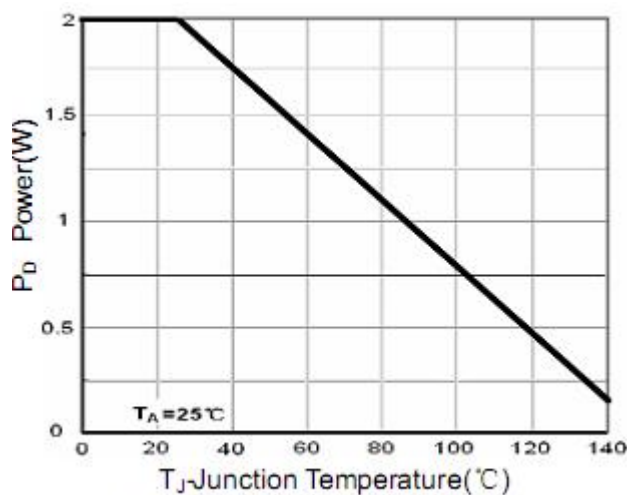


Figure 6 Power Dissipation

N- Channel Typical Characteristics

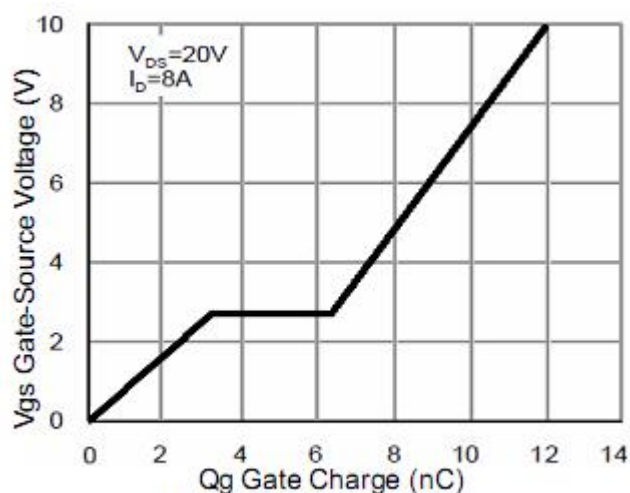


Figure 7 Gate Charge

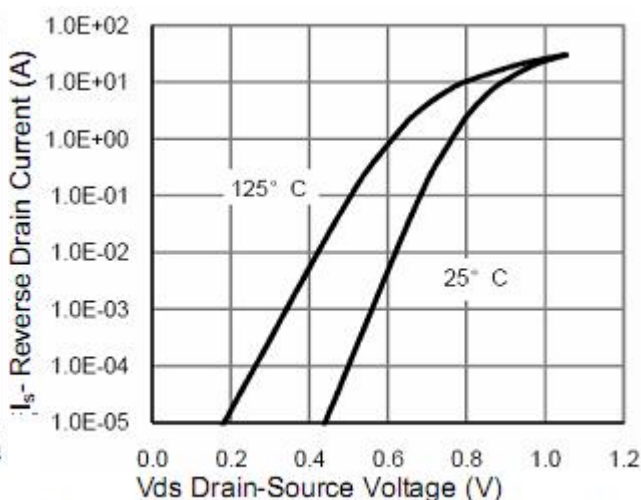


Figure 8 Source- Drain Diode Forward

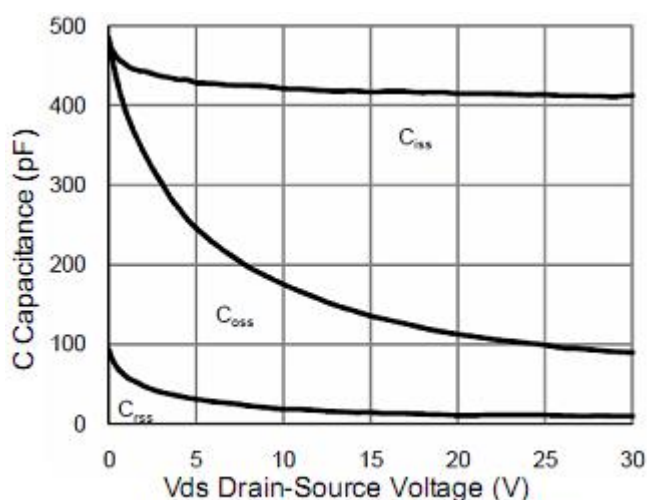


Figure 9 Capacitance vs Vds

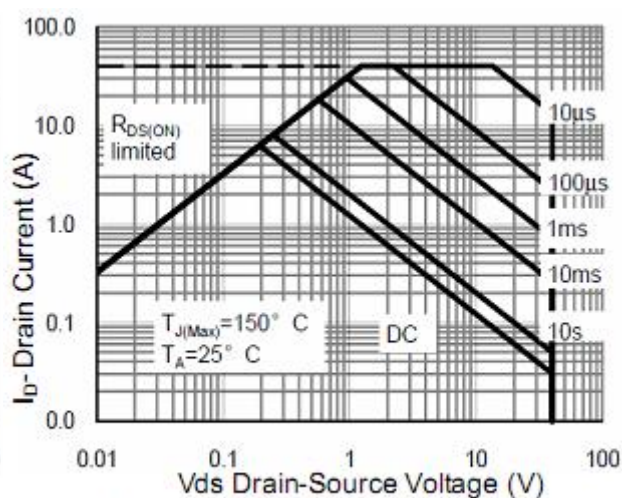


Figure 10 Safe Operation Area

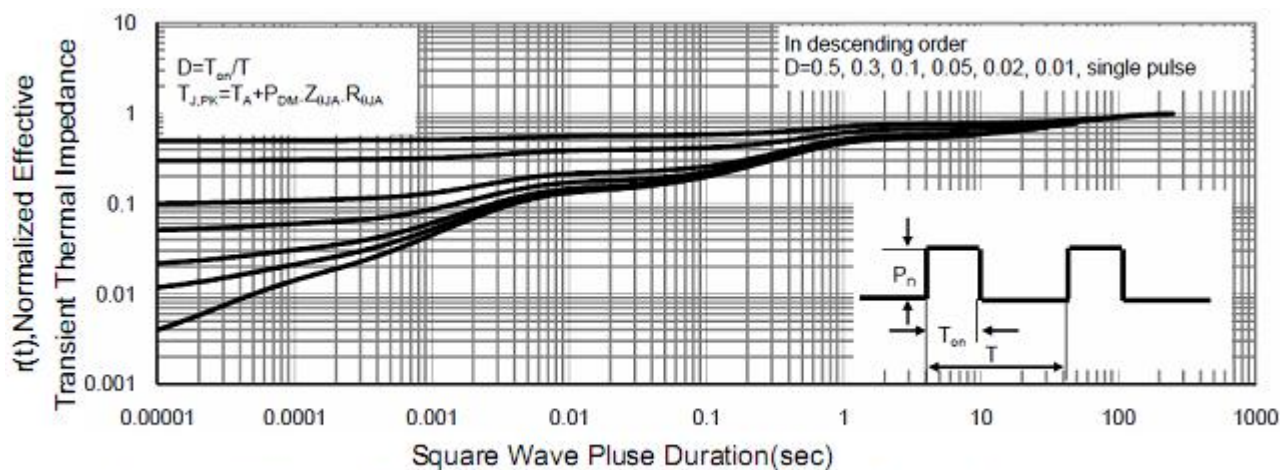


Figure 11 Normalized Maximum Transient Thermal Impedance

P- Channel Typical Characteristics

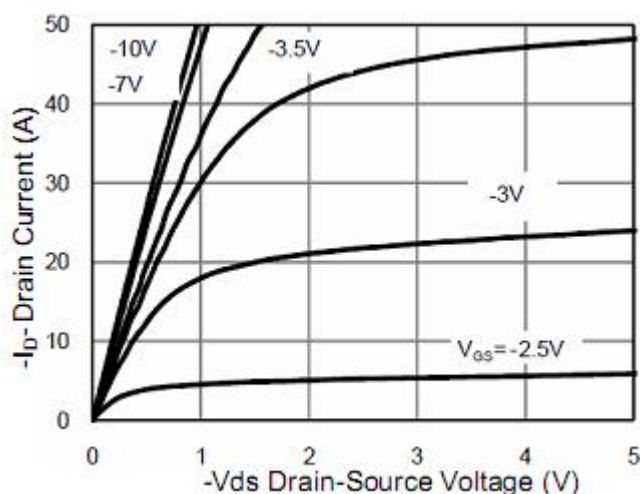


Figure 1 Output Characteristics

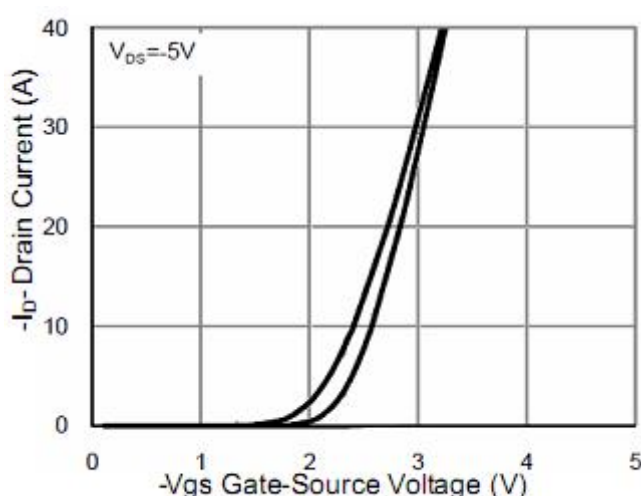


Figure 2 Transfer Characteristics

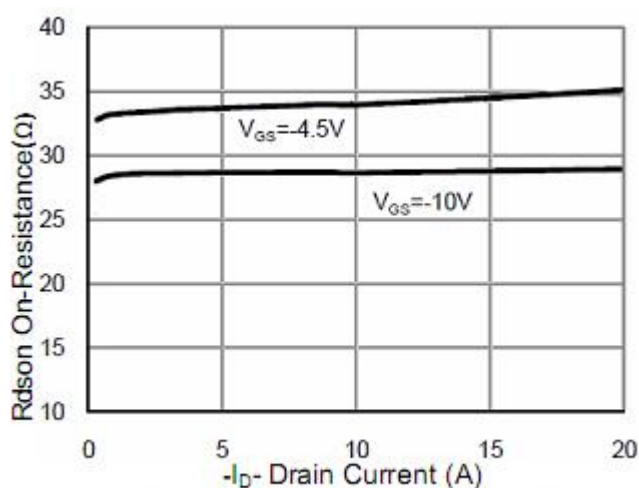


Figure 3 Rdson- Drain Current

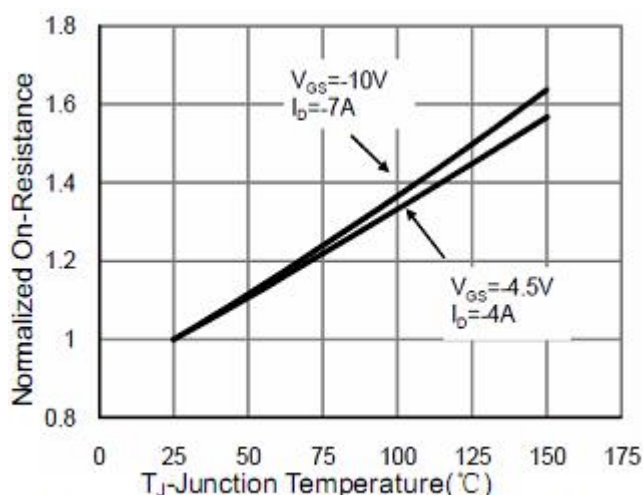


Figure 4 Rdson-Junction Temperature

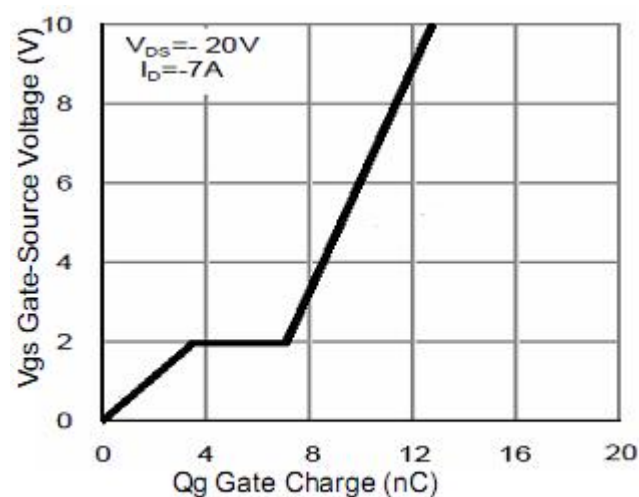


Figure 5 Gate Charge

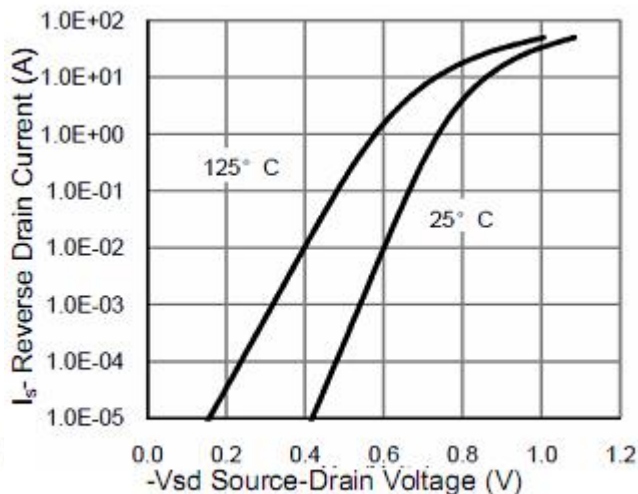


Figure 6 Source- Drain Diode Forward

P- Channel Typical Characteristics

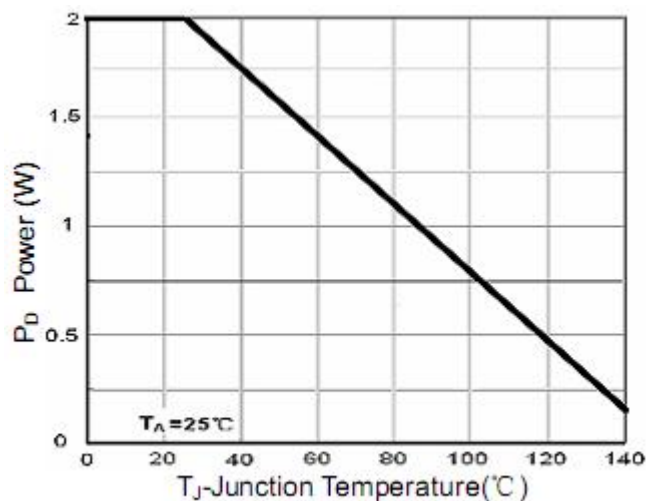


Figure 7 Power Dissipation

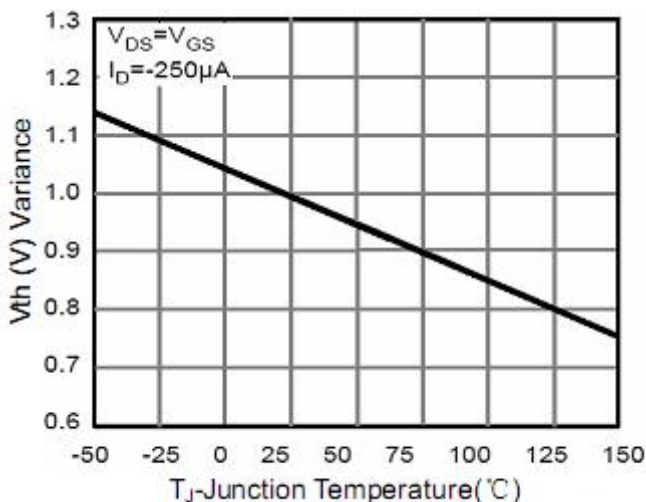


Figure 8 $V_{GS(th)}$ vs Junction Temperature

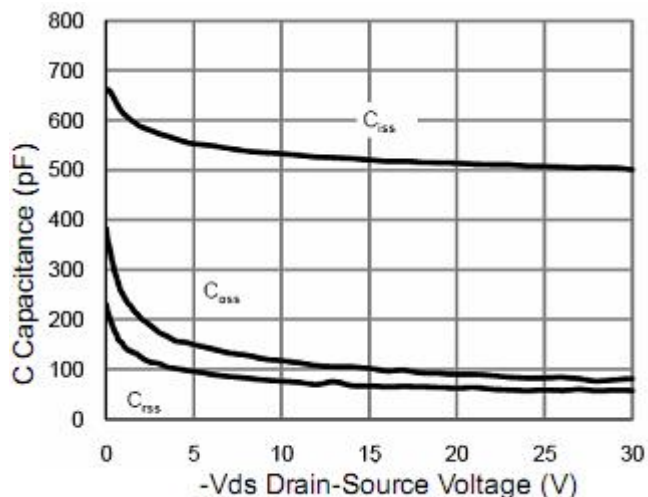


Figure 9 Capacitance vs Vds

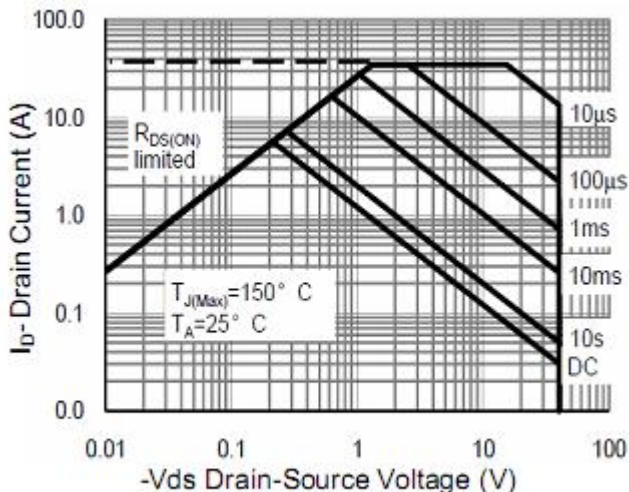


Figure 10 Safe Operation Area

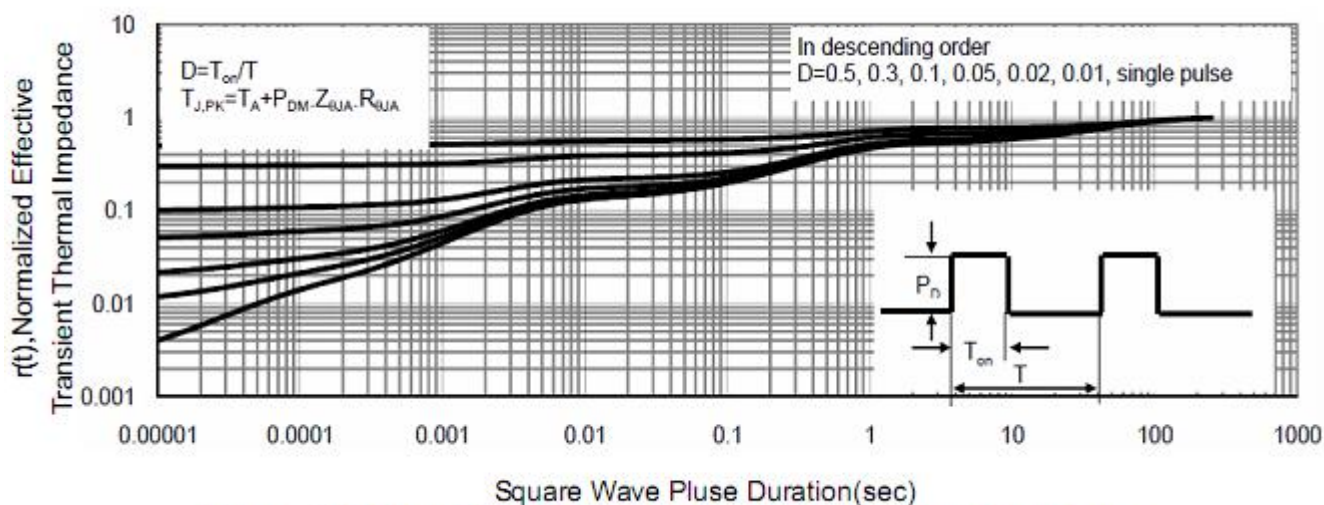
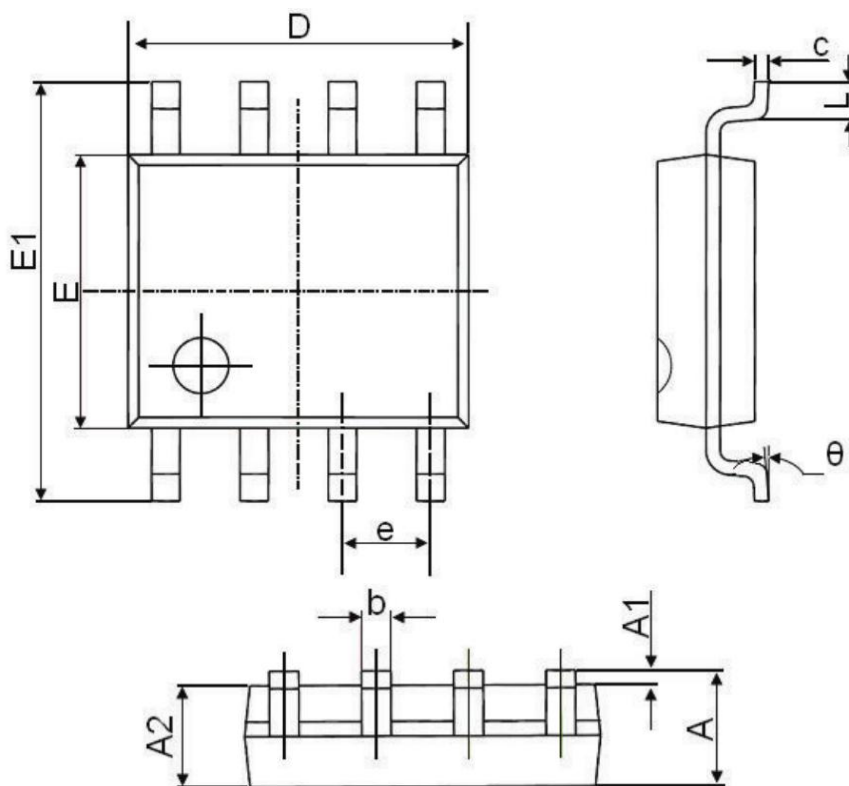


Figure 11 Normalized Maximum Transient Thermal Impedance

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°