

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D	$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	15mΩ@10V	9A	-30V	21mΩ@-10V	-8.5A
	24mΩ@4.5V			27mΩ@-4.5V	

Feature

- Trench FET Power MOSFET
- Excellent R_{ds(on)} and Low Gate Charge
- Fast Switching Speed

Application

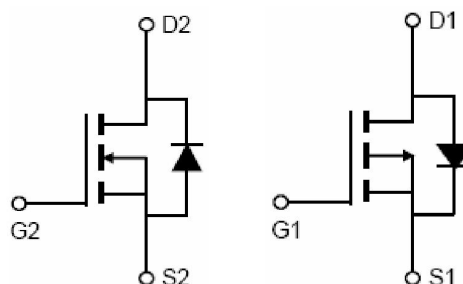
- Motor Control
- Inverters

Package

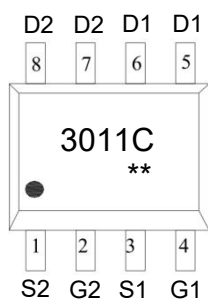


SOP-8

Circuit diagram



Marking



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

Parameter	Symbol	N-Channel	p-Channel	Unit
Drain-Source Voltage	V _{DS}	30	-30	V
Gate-Source Voltage	V _{GS}	±20	±20	V
Continuous Drain Current	I _D	9	-8.5	A
Power Dissipation	P _D	2	2	W
Thermal Resistance, Junction-to-Ambient ¹⁾	R _{θJA}	62.5	62.5	°C/W
Junction Temperature	T _J	150	150	°C
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	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 24V, 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		2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 8A		10	15	mΩ
		V _{GS} = 4.5V, I _D = 6A		15	24	mΩ
Dynamic characteristics³⁾						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		940		pF
Output Capacitance	C _{oss}			131		
Reverse Transfer Capacitance	C _{rss}			109		
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 8A		9.63		nC
Gate-Source Charge	Q _{gs}			3.88		
Gate-Drain Charge	Q _{gd}			3.44		
Turn-on delay time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V I _D = 8A, R _{GEN} = 1.5Ω		4.2		nS
Turn-on rise time	t _r			8.2		
Turn-off delay time	t _{d(off)}			31		
Turn-off fall time	t _f			4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				9	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = 1A			1.2	V

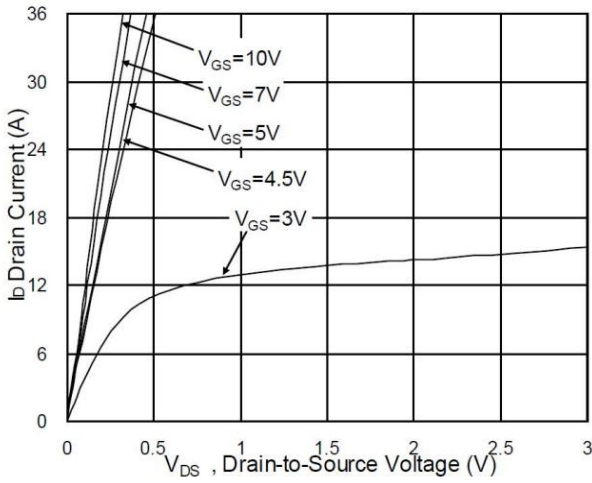
P-CH Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -24V, 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		-2.5	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -8A		14	21	mΩ
		V _{GS} = -4.5V, I _D = -6A		18	27	mΩ
Dynamic characteristics³⁾						
Input Capacitance	C _{iSS}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz		1600		pF
Output Capacitance	C _{oss}			350		
Reverse Transfer Capacitance	C _{rSS}			300		
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -4.5V, I _D = -8A		30		nC
Gate-Source Charge	Q _{gs}			5.5		
Gate-Drain Charge	Q _{gd}			8		
Turn-on delay time	t _{d(on)}	V _{DD} = -15V, V _{GS} = -10V, I _D = -1A, R _{GEN} = 6Ω		10		nS
Turn-on rise time	t _r			15		
Turn-off delay time	t _{d(off)}			110		
Turn-off fall time	t _f			70		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-8.5	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = -1A			-1.2	V

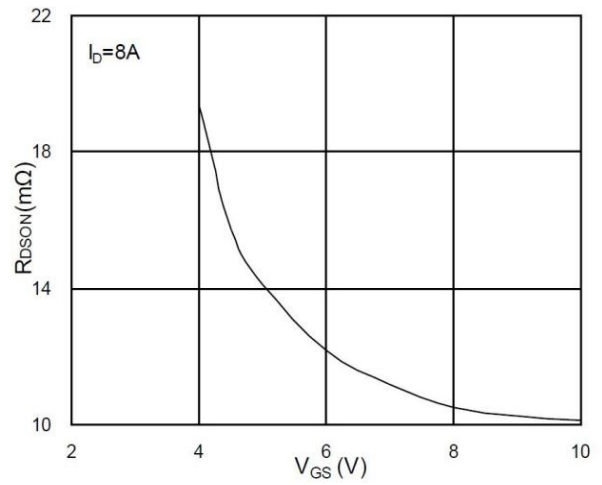
Notes:

- 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.

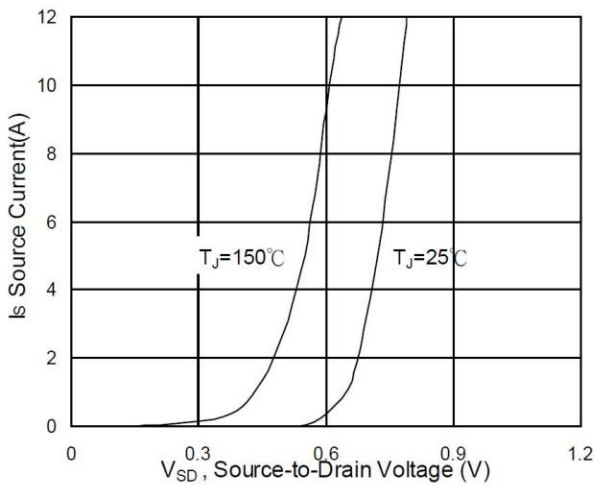
N- Channel Typical Characteristics



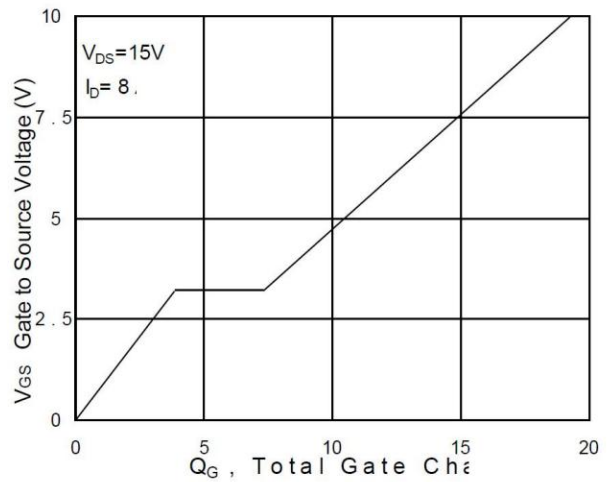
Typical Output Characteristics



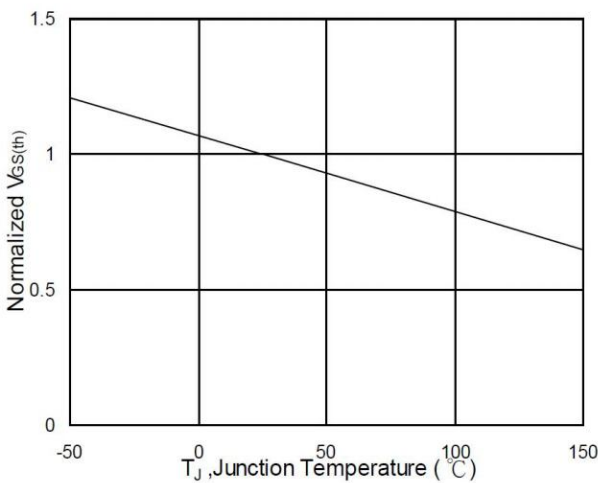
On-Resistance vs. Gate-Source



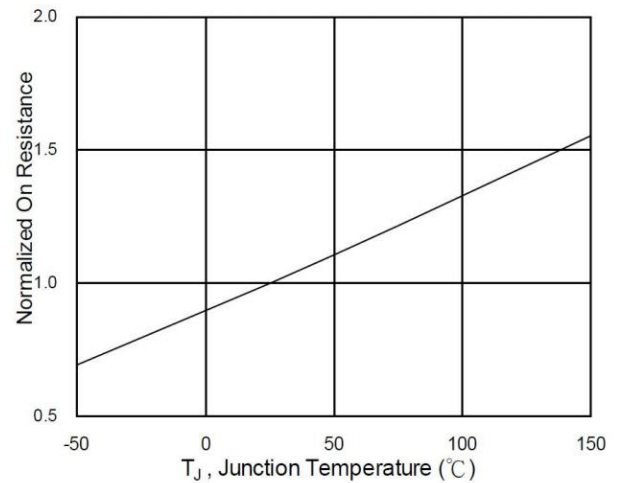
Forward Characteristics Of Reverse



Gate-Charge Characteristics

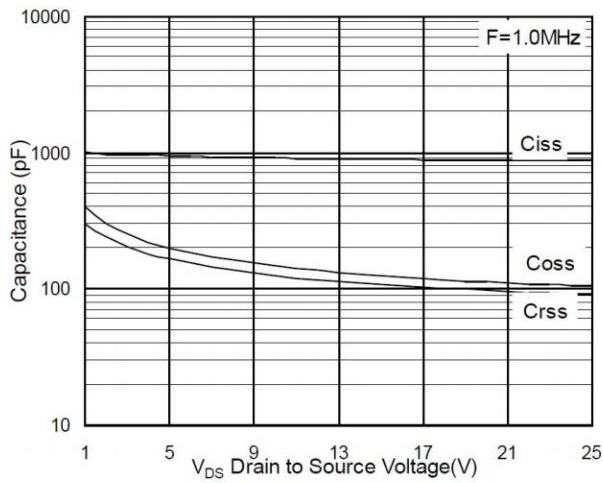


Normalized $V_{GS(th)}$ vs. T_J

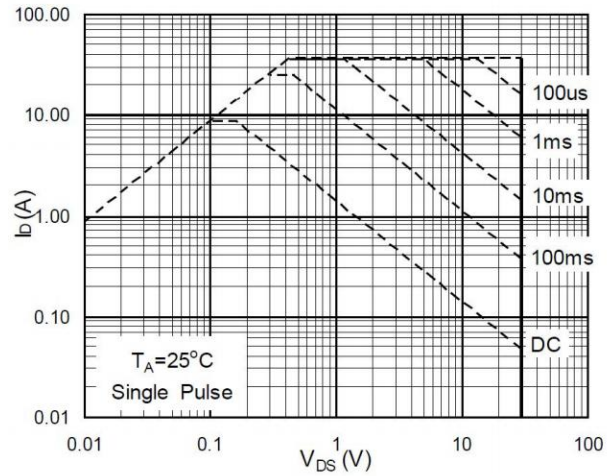


Normalized $R_{DS(on)}$ vs. T_J

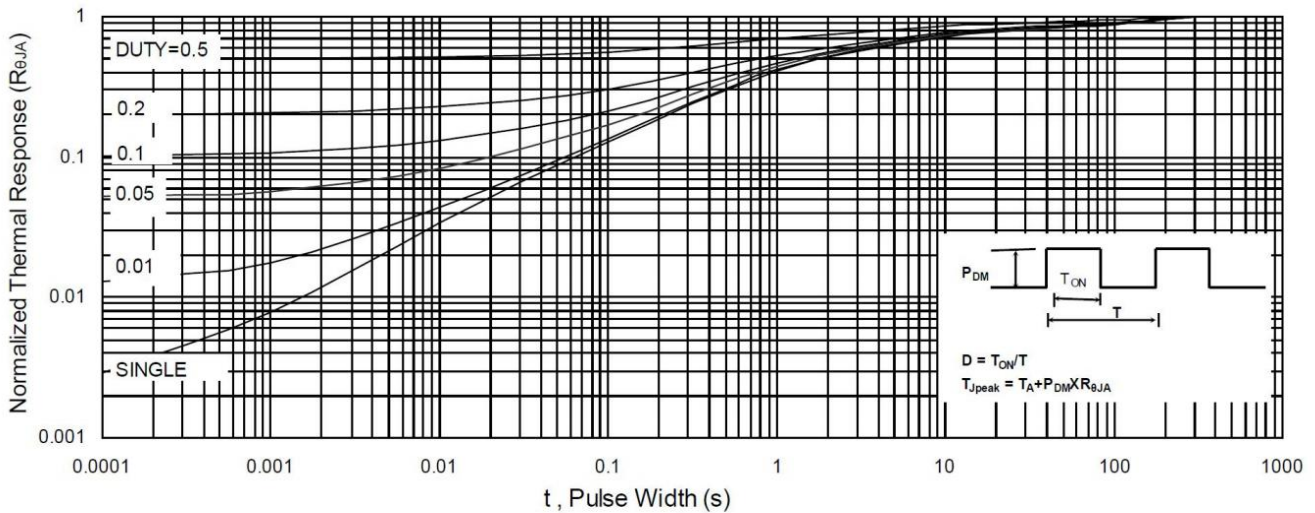
N- Channel Typical Characteristics



Capacitance

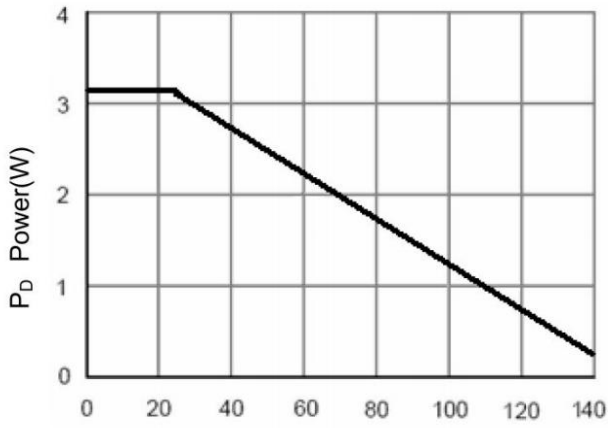


Safe Operating Area

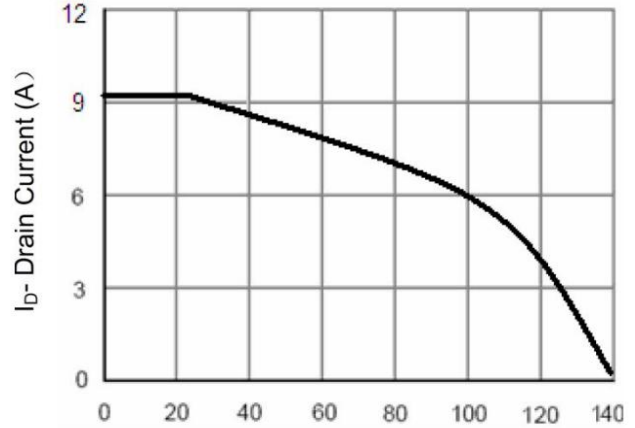


Normalized Maximum Transient Thermal Impedance

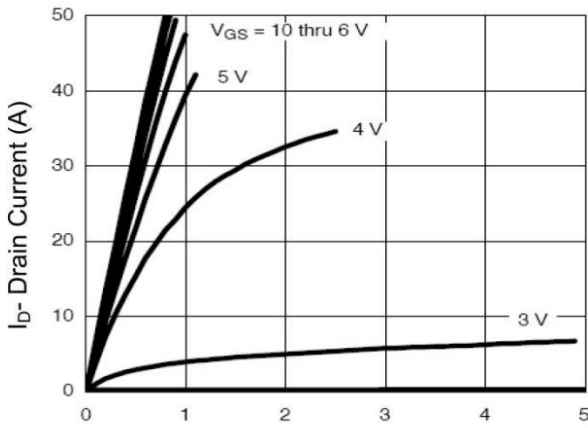
P- Channel Typical Characteristics



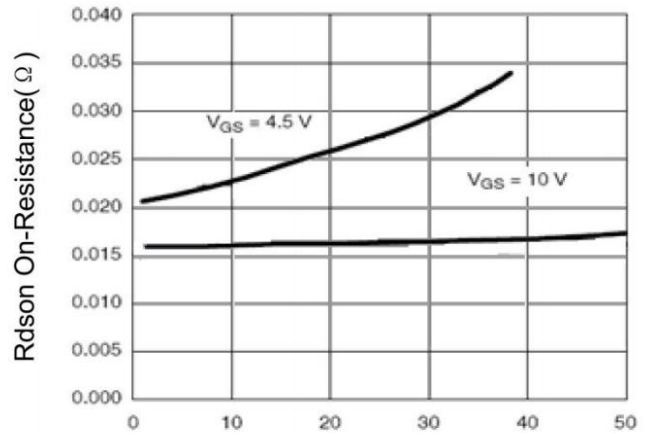
T_J-Junction Temperature(°C)
Power Dissipation



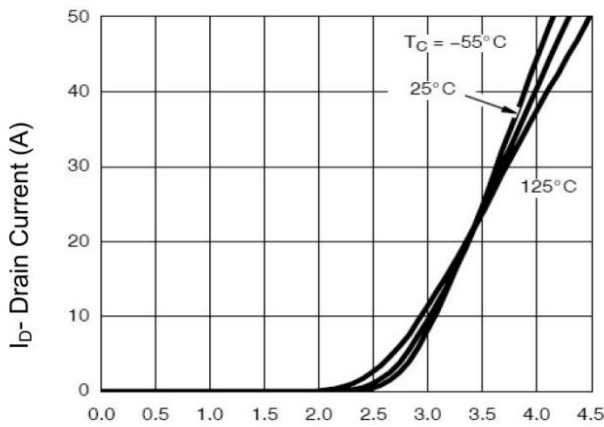
T_J-Junction Temperature(°C)
Drain Current



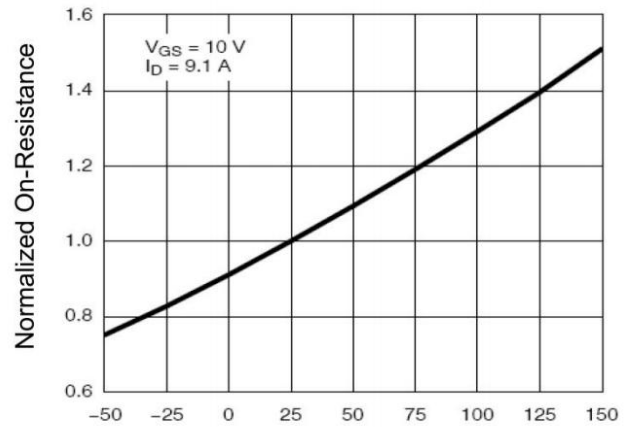
V_{GS} = 10 thru 6 V
Output Characteristics



V_{GS} = 4.5 V
V_{GS} = 10 V
Drain-Source On-Resistance

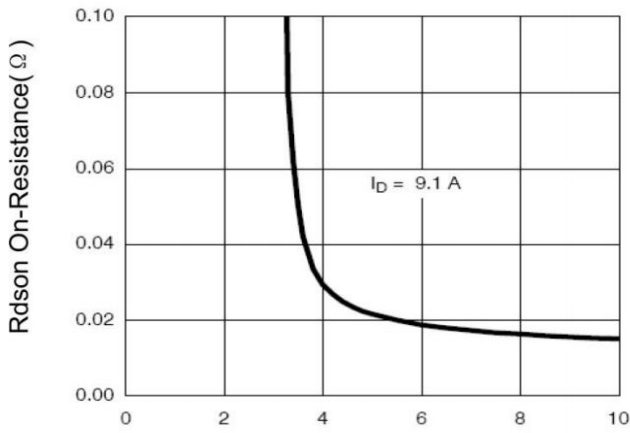


T_C = -55°C
25°C
125°C
Transfer Characteristics



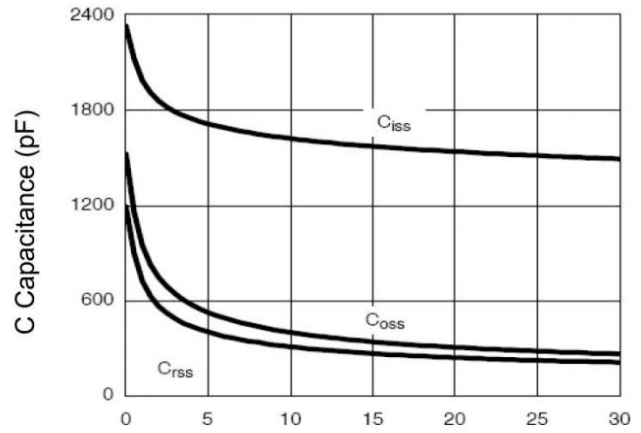
V_{GS} = 10 V
I_D = 9.1 A
Drain-Source On-Resistance

P- Channel Typical Characteristics



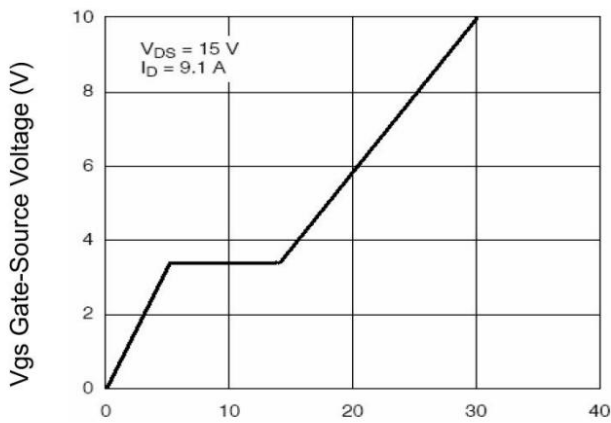
Vgs Gate-Source Voltage (V)

Rdson vs Vgs



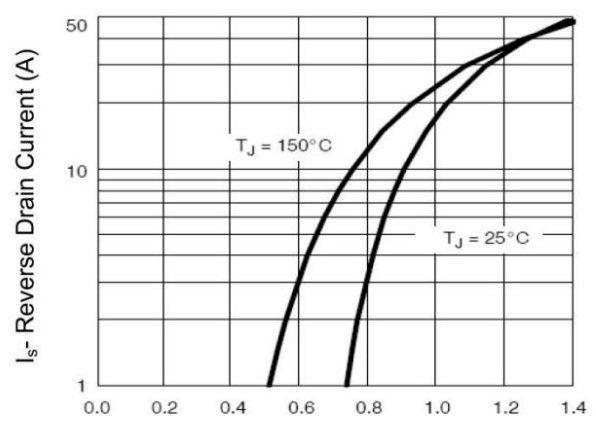
Vds Drain-Source Voltage (V)

Capacitance vs Vds



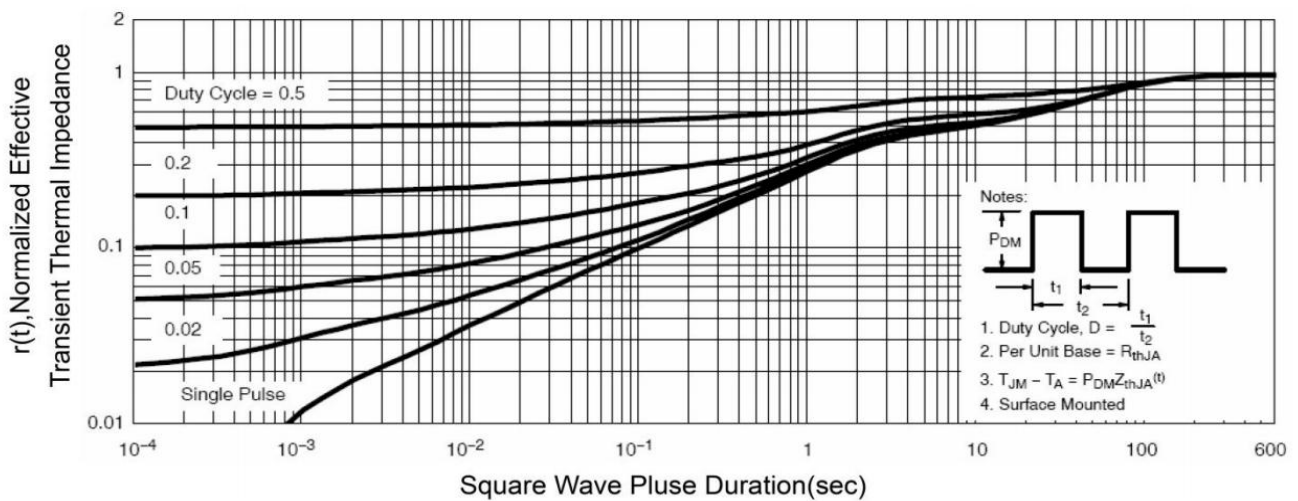
Qg Gate Charge (nC)

Gate Charge



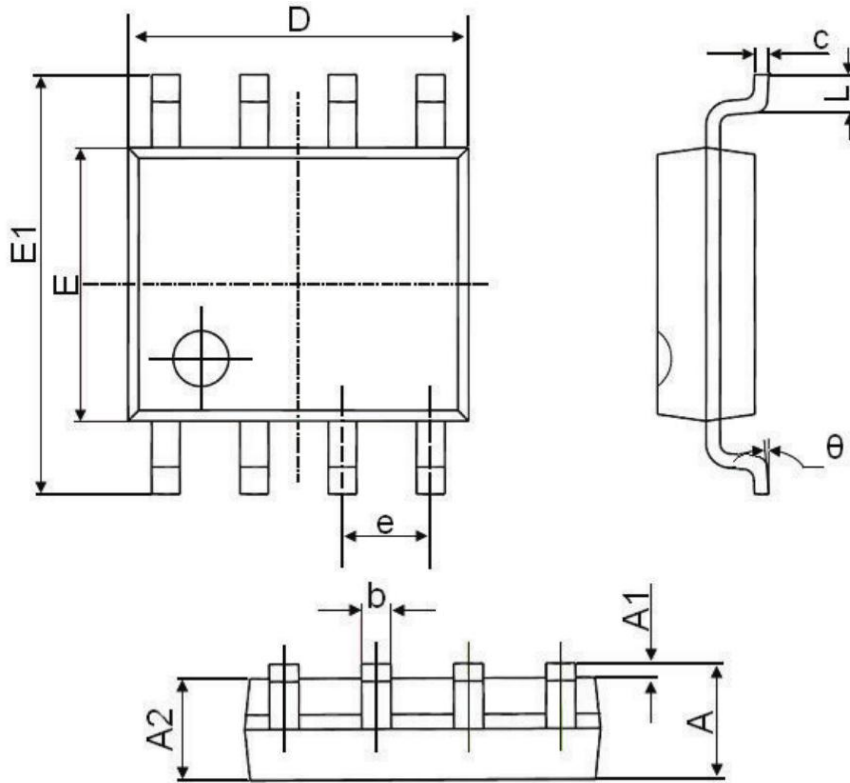
Vsd Source-Drain Voltage (V)

Source- Drain Diode Forward



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
theta	0°	8°	0°	8°