N-Channel 100 V (D-S) Power MOSFET

PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (mΩ)(Typ.)	I_D (A)[a]	Q_g (Typ.)
100	85 at V_{GS} = 10 V	3.1	3.49 nC

FEATURES

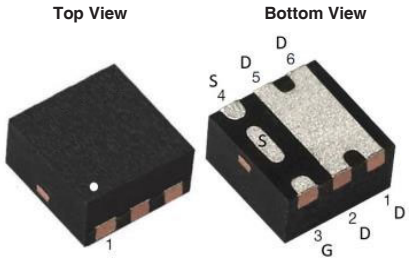
- DT-Trench Power MOSFET
- Low on-resistance
- SuperLow Gate Charge

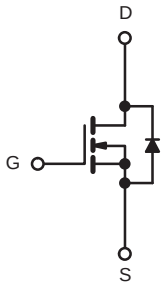
RoHS COMPLIANT

APPLICATIONS

- Load Switch
- PWM Applications
- Power Management

DFN1.6X1.6-6L Pin Configuration





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)				
Parameter		**Symbol**	**Limit**	**Unit**
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150 °C)[a]	T_A = 25 °C	I_D	3.1	A
	T_A = 70 °C		2.5	
Pulsed Drain Current[b]		I_{DM}	12	
Maximum Power Dissipation[c]	T_A = 25 °C	P_D	1.8[c]	W
	T_A = 70 °C		1.1	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Soldering Recommendations (Peak Temperature)			260	

THERMAL RESISTANCE RATINGS				
Parameter	**Symbol**	**Typical**	**Maximum**	**Unit**
Maximum Junction-to-Ambient[d]	R_{thJA}	-	70	°C/W

Notes

a. Calculated continuous current based on maximum allowablejunction temperature.
b. Repetitive rating; pulse width limited by max. junction temperature.
c. Pd is based on max. junction temperature, using junction-case thermal resistance.
d. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper,in a still air environment with Ta=25 °C.

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	1	-	3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 V, V_{GS} = 0 V	-	-	1	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J= 55°C	-	-	5	
On-State Drain Current [a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	3.1	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 2 A	-	85	100	mΩ
		V_{GS} = 4.5 V, I_D = 2 A	-	110	130	
Forward Transconductance [a]	g_{fs}	V_{DS} = 5 V, I_D = 2 A	-	11	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 50 V, f = 1MHz	-	180	-	pF
Output Capacitance	C_{oss}		-	32	-	
Reverse Transfer Capacitance	C_{rss}		-	2.5	-	
Total Gate Charge [c]	Q_g	V_{DS} = 50 V, V_{GS} = 10 V, I_D = 2 A	-	3.49	-	nC
Gate-Source Charge [c]	Q_{gs}		-	0.66	-	
Gate-Drain Charge [c]	Q_{gd}		-	0.92	-	
Gate Resistance	R_g	f = 1 MHz	-	3.5	-	Ω
Turn-On Delay Time [c]	$t_{d(on)}$	V_{DD} = 50 V, I_D = 1 A, V_{GEN} = 10 V, R_g = 3 Ω	-	4.8	-	ns
Rise Time [c]	t_r		-	19	-	
Turn-Off Delay Time [c]	$t_{d(off)}$		-	17	-	
Fall Time [c]	t_f		-	6	-	
Drain-Source Body Diode Ratings and Characteristics [b] (T_C = 25 °C)						
Continuous Source Current	I_S	T_C = 25 °C	-	-	3.1	A
Pulsed Source Current	I_{SM}		-	-	12	A
Forward Voltage [a]	V_{SD}	I_F = 1 A, V_{GS} = 0 V	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_F = 20 A, di/dt = 100 A/µs	-	13	-	ns
Reverse Recovery Charge	Q_{rr}		-	19	-	nC

Notes

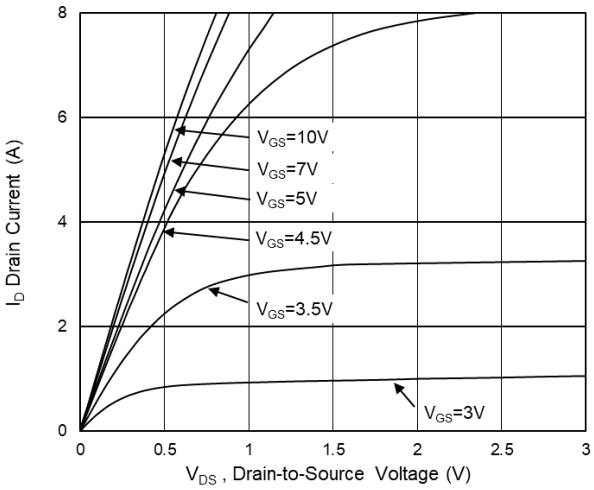
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

b. Guaranteed by design, not subject to production testing.

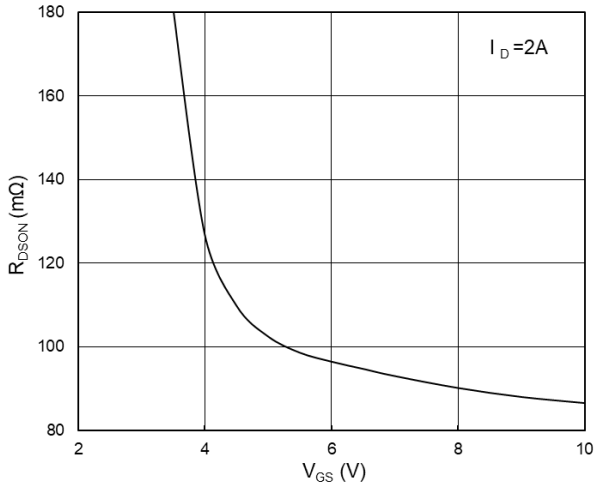
c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

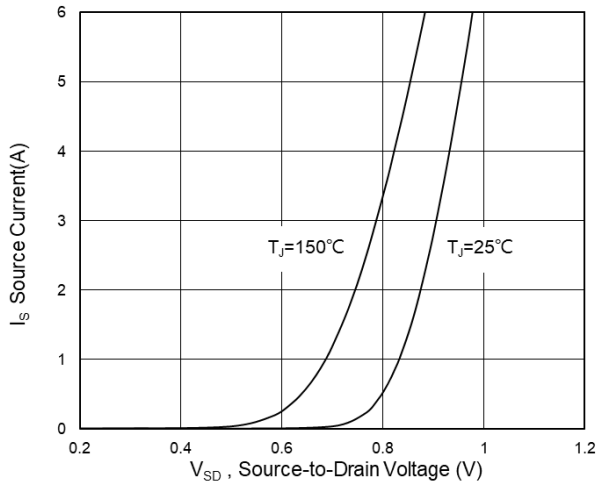
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



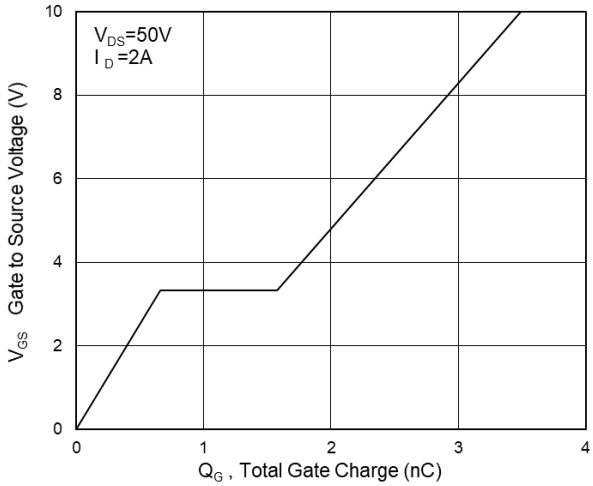
Typical Output Characteristics



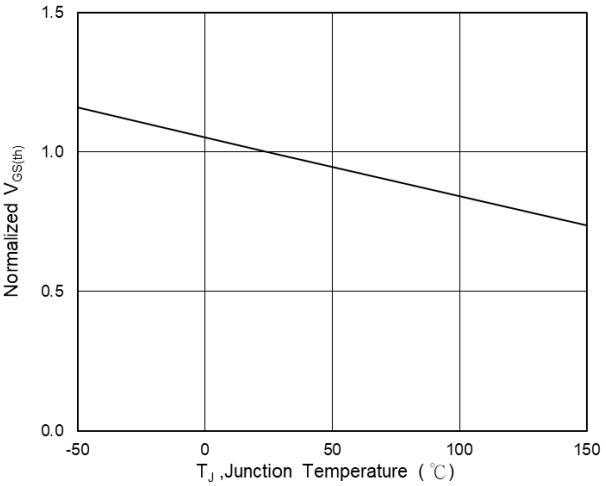
On-Resistance vs G-S Voltage



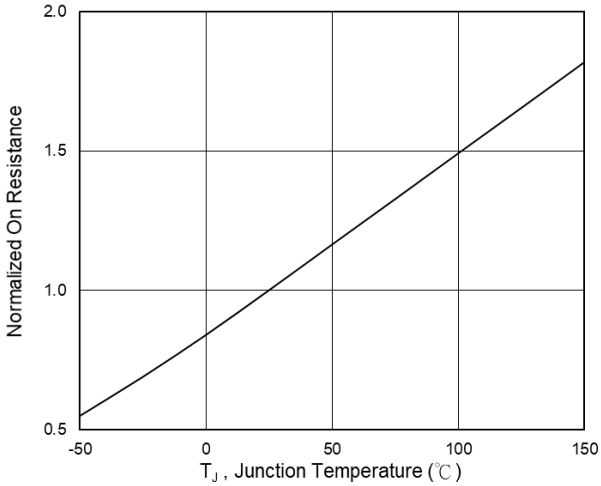
Source Drain Forward Characteristics



Gate-Charge Characteristics

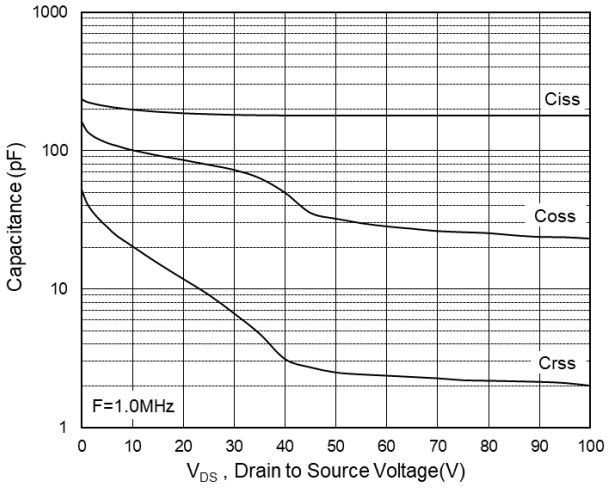


Normalized $V_{GS(th)}$ vs T_J

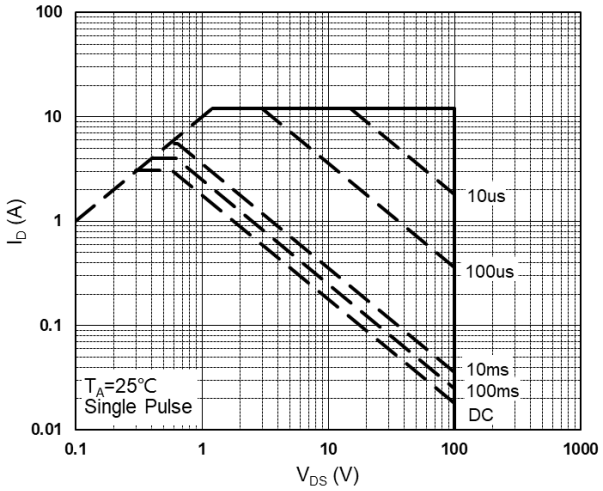


Normalized R_{DSON} vs T_J

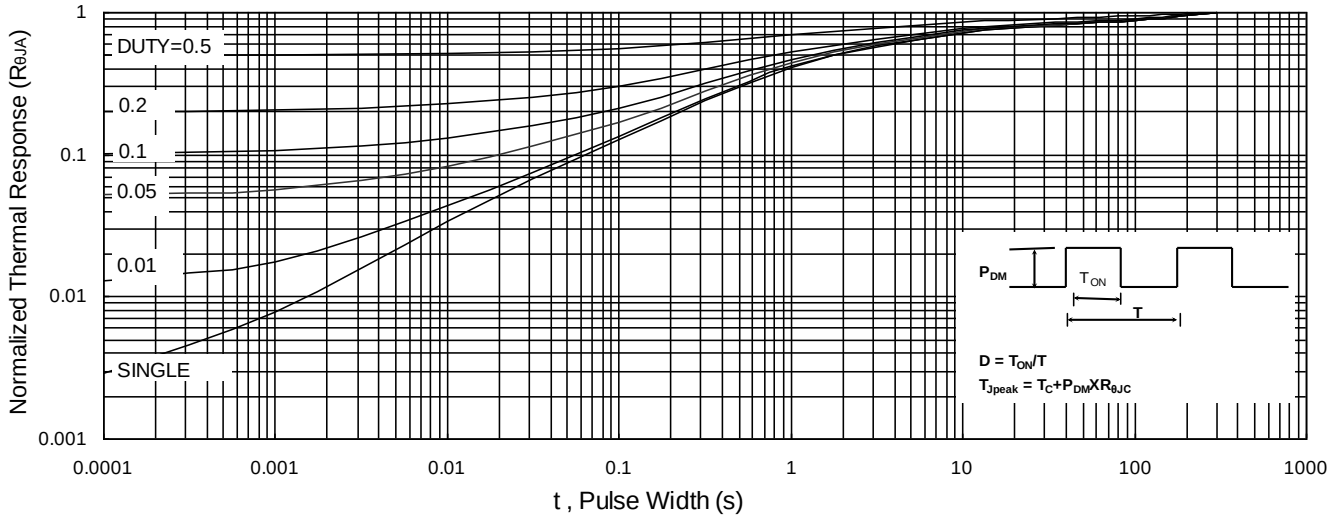
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



Capacitance

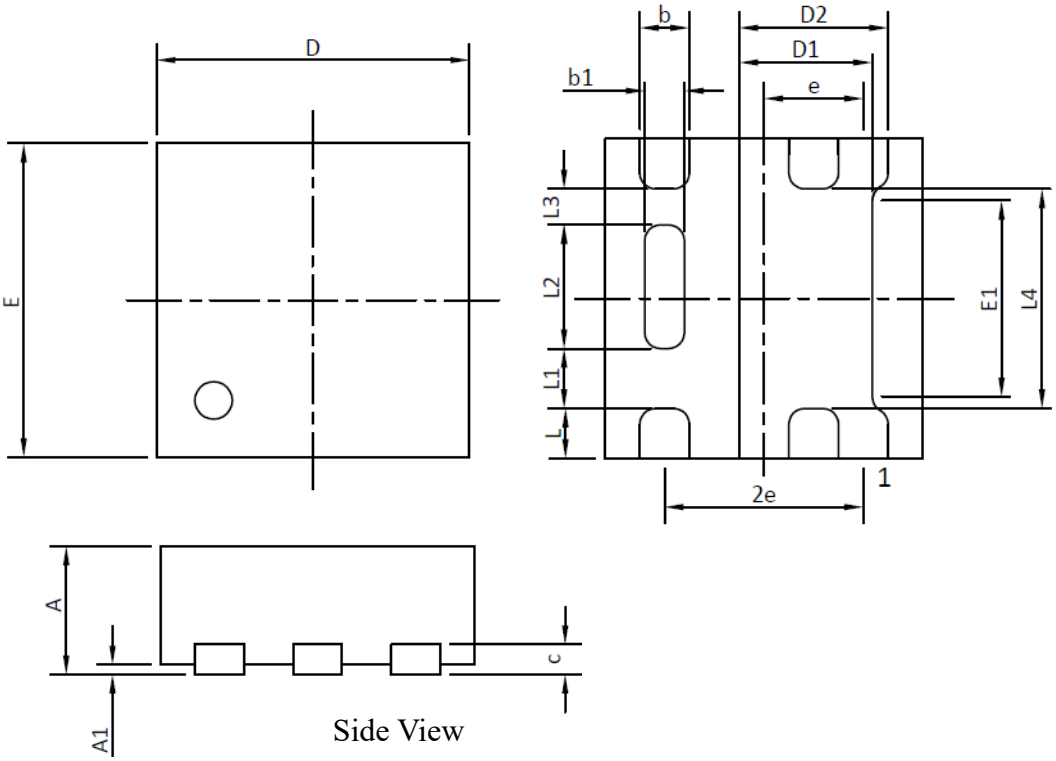


Safe Operating Area



Normalized Maximum Transient Thermal Impedance

DFN1.6*1.6-6L PACKAGE OUTLINE



SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.022	0.024
A1	0.00	-----	0.05	0.000	-----	0.002
b	0.22	0.25	0.28	0.009	0.010	0.011
b1	0.17	0.20	0.23	0.007	0.008	0.009
c	0.152 Ref.			0.006 Ref.		
D	1.55	1.60	1.65	0.061	0.063	0.065
D1	0.67 TYP			0.026 TYP		
D2	0.75 TYP			0.030 TYP		
E	1.55	1.60	1.65	0.061	0.063	0.065
E1	0.98 TYP			0.039 TYP		
e	0.50 BSC			0.020 BSC		
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.25	0.30	0.35	0.010	0.012	0.014
L2	0.57	0.62	0.67	0.022	0.024	0.026
L3	0.13	0.18	0.23	0.005	0.007	0.009
L4	1.05	1.10	1.15	0.041	0.043	0.045

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