

Dual N-Channel 60-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

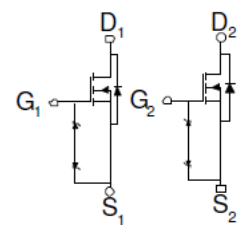
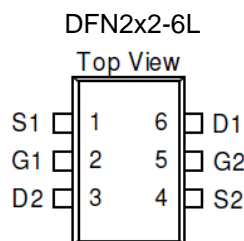
Typical Applications:

- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
60	260 @ $V_{GS} = 10V$	2.0
	330 @ $V_{GS} = 4.5V$	1.8



RoHS
COMPLIANT
HALOGEN
FREE



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	$T_A = 25^\circ\text{C}$	2.0
		$T_A = 70^\circ\text{C}$	1.6
Pulsed Drain Current ^b	I_{DM}	10	
Continuous Source Current (Diode Conduction) ^a	I_S	1.8	A
Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	1.5
		$T_A = 70^\circ\text{C}$	0.95
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	t \leq 10 sec	40
		Steady State	90

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

Electrical Characteristics

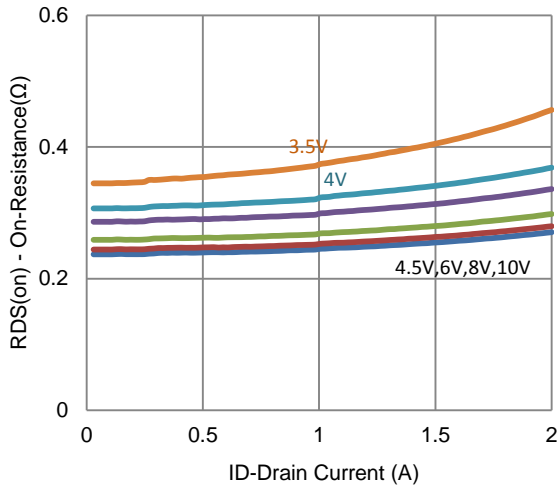
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48 V, V_{GS} = 0 V$			1	μA
		$V_{DS} = 48 V, V_{GS} = 0 V, T_J = 55^\circ C$			25	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = 5 V, V_{GS} = 10 V$	3			A
Drain-Source On-Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10 V, I_D = 1.5 A$			260	m Ω
		$V_{GS} = 4.5 V, I_D = 1.2 A$			330	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15 V, I_D = 1.5 A$		10		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 0.9 A, V_{GS} = 0 V$		0.84		V
Dynamic ^b						
Total Gate Charge	Q_g	$V_{DS} = 30 V, V_{GS} = 4.5 V,$ $I_D = 1.5 A$		1.7		nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			1.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 30 V, R_L = 20 \Omega, I_D = 1.5 A,$ $V_{GEN} = 10 V, R_{GEN} = 6 \Omega$		3		ns
Rise Time	t_r			4		
Turn-Off Delay Time	$t_{d(off)}$			12		
Fall Time	t_f			3		
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V, f = 1 Mhz$		97		pF
Output Capacitance	C_{oss}			11		
Reverse Transfer Capacitance	C_{rss}			7		

Notes

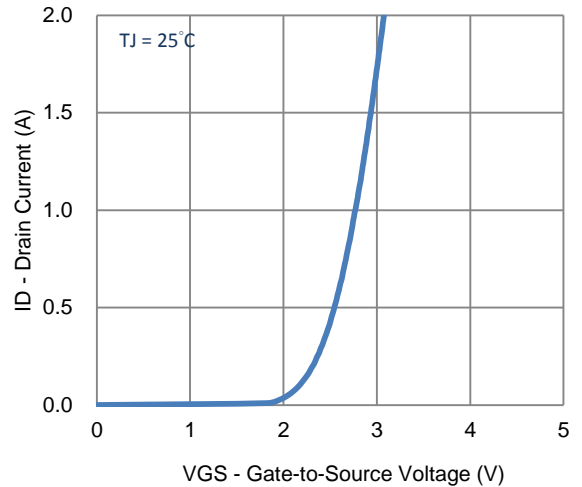
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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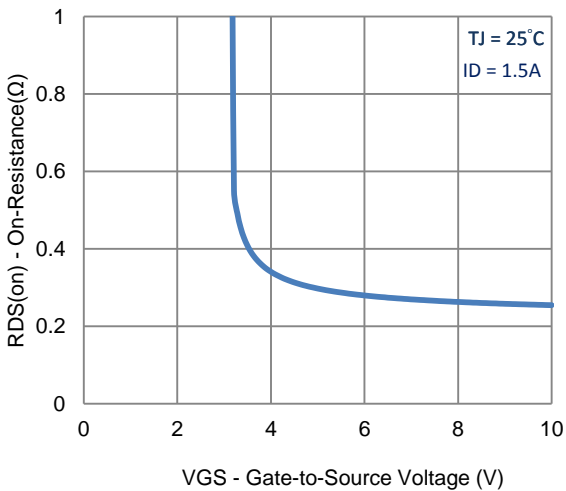
Typical Electrical Characteristics



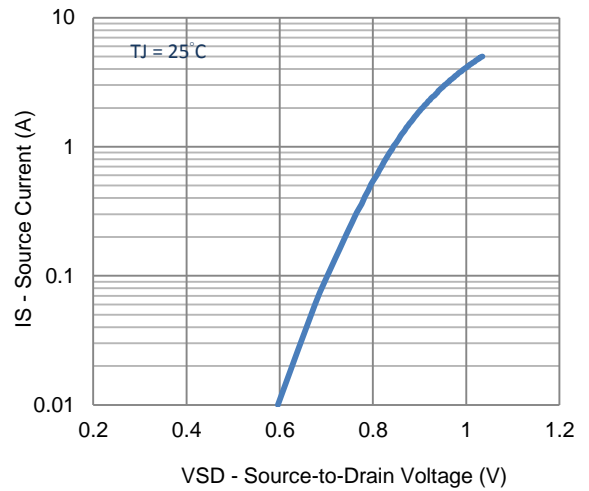
1. On-Resistance vs. Drain Current



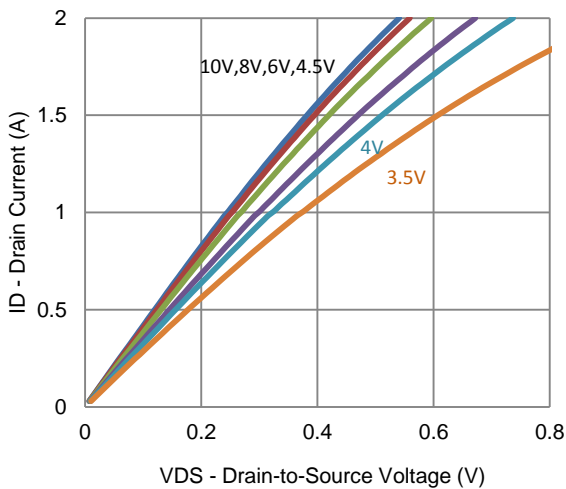
2. Transfer Characteristics



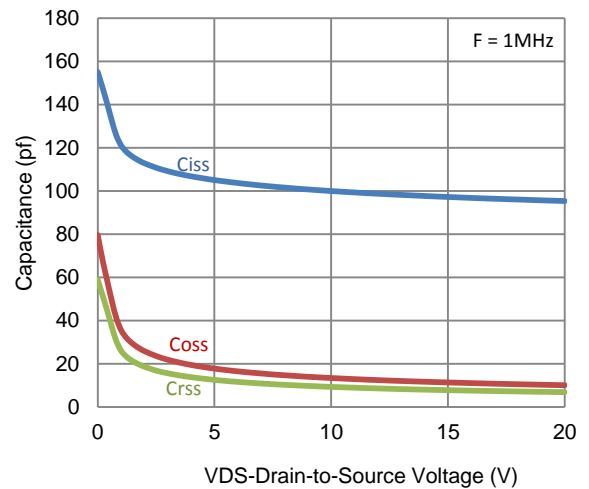
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

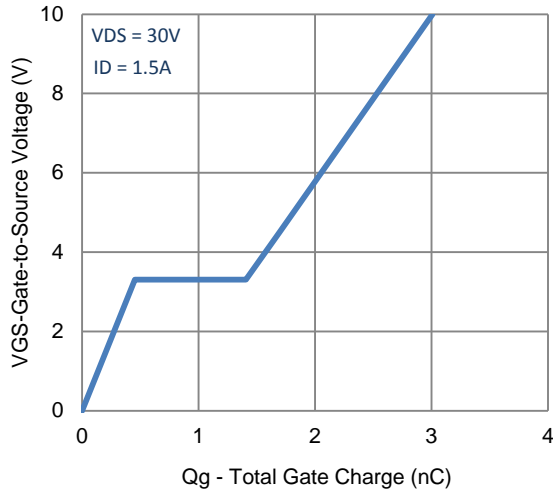


5. Output Characteristics

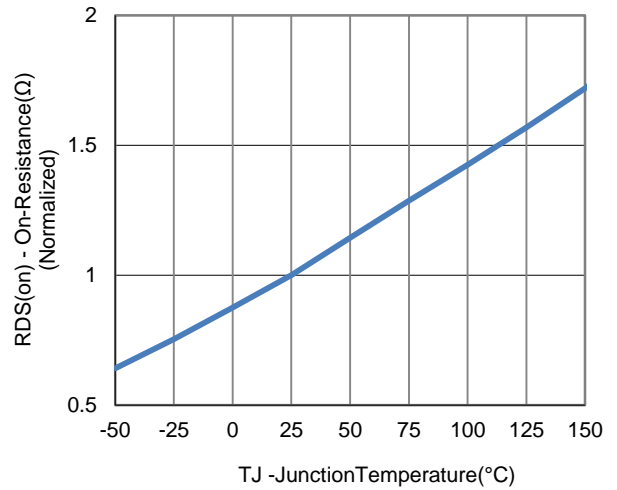


6. Capacitance

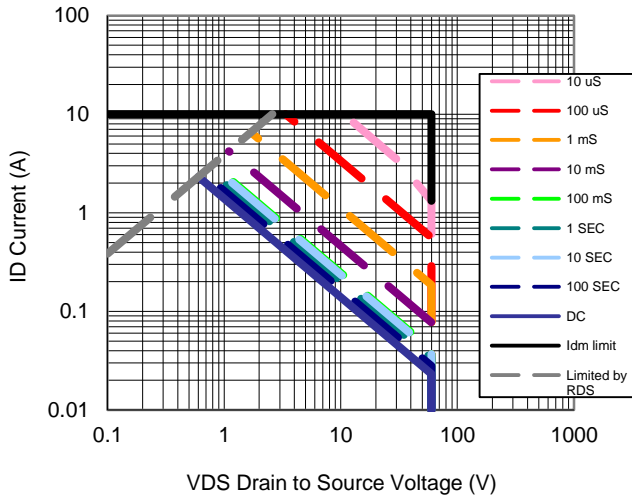
Typical Electrical Characteristics



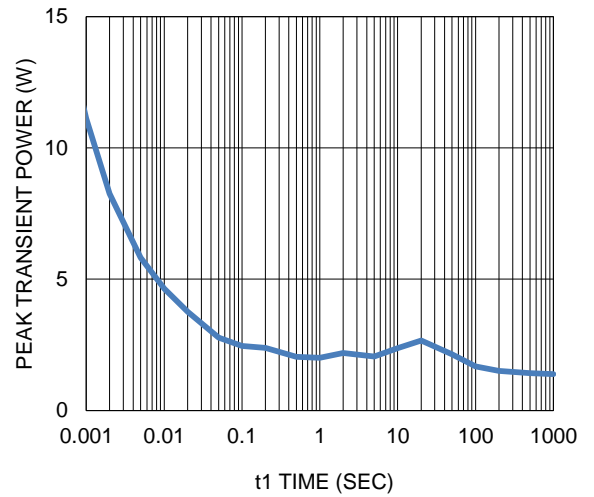
7. Gate Charge



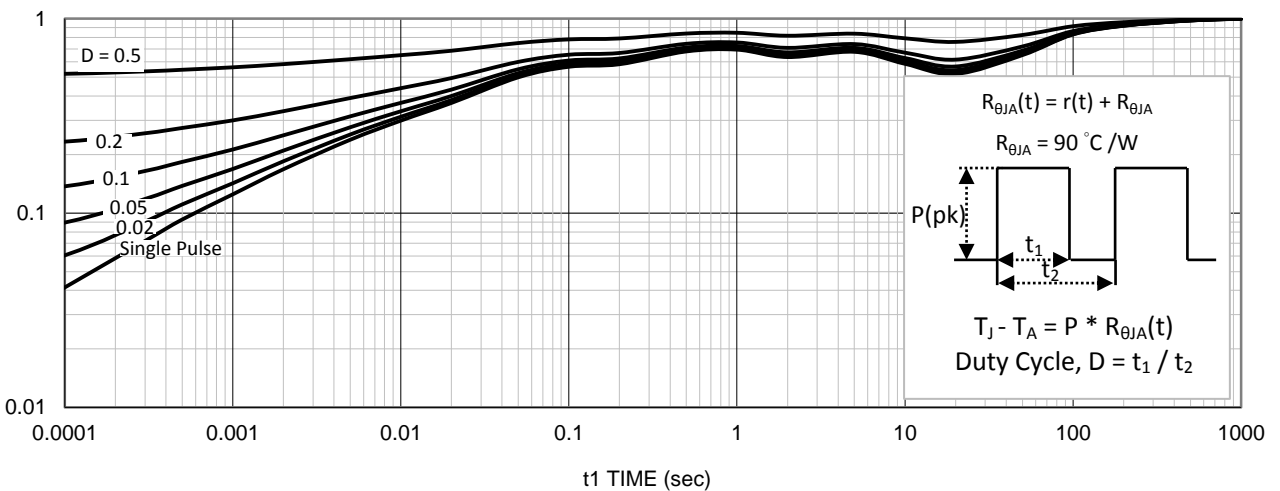
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area

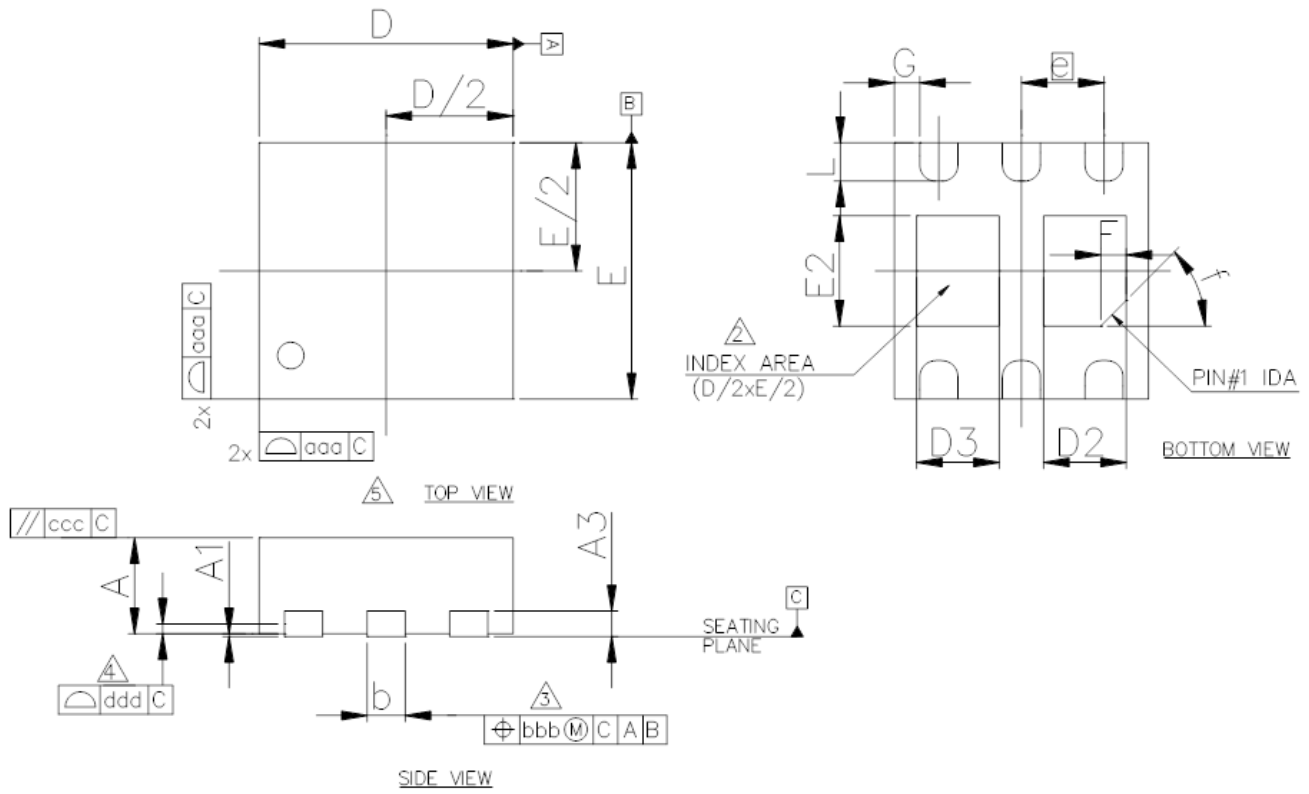


10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient

Package Information



SYMBOL	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80	0.028	0.030	0.032
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	----	0.20 ref	----	----	0.008 ref	----
b	0.25	0.30	0.35	0.010	0.012	0.014
D	2.00 BSC			0.079 BSC		
D2	0.60	0.65	0.70	0.024	0.026	0.028
D3	0.60	0.65	0.70	0.024	0.026	0.028
E	2.00 BSC			0.079 BSC		
E2	0.81	0.86	0.91	0.032	0.034	0.036
L	0.25	0.65 BSC	0.35	0.010	0.026 BSC	0.014
F	0.20 REF			0.008 REF		
f	45°			45°		
G	0.15	0.20	0.25	0.006	0.008	0.010
aaa	0.15			0.006		
bbb	0.10			0.004		
ccc	0.10			0.004		
ddd	0.08			0.003		