

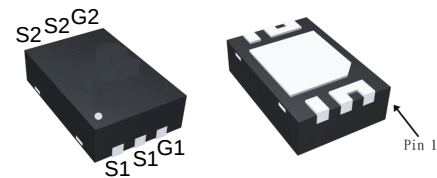
Features

- 20V/15A,
 $R_{DS(ON)} = 15m\Omega$ (typ.) @ $V_{GS} = 4.5V$
 $R_{DS(ON)} = 18m\Omega$ (typ.) @ $V_{GS} = 2.5V$
- 100% UIS Tested
- ESD Protection
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

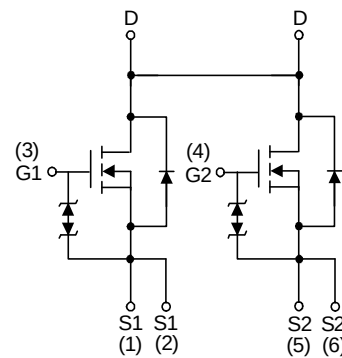
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



DFN2x3A-6_EP



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±12	
I _D	Continue Drain Current	V _{GS} =4.5V	15	A
I _{DM}	Pulsed Drain Current		45	
I _S	Diode continuous forward current		15	A
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
P _D	Maximum Power Dissipation	T _A =25°C	3.5	W
		T _A =85°C	1.8	
R _{θJA} *	Thermal Resistance-Junction to Ambient		36	°C/W
R _{θJC} *	Thermal Resistance-Junction to Case		5.6	°C/W

Note : *Surface Mounted on 1in² pad area, t ≤ 10sec.

** Current limited by bond wire.

Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

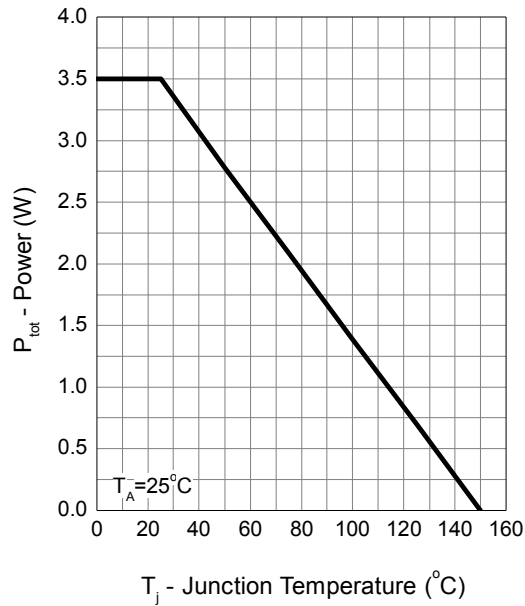
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.5	0.7	1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±10V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =4A V _{GS} =2.5V, I _{DS} =4A	-	15 18	18 22	mΩ
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =1.5A, V _{GS} =0V	-	0.7	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =4A, dI _{SD} /dt=100μs	-	15	-	nS
Q _{rr}	Reverse Recovery Charge		-	7	-	nC
Dynamic Characteristics ^b						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	4	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz	-	950	-	pF
C _{oss}	Output Capacitance		-	175	-	
C _{rss}	Reverse Transfer Capacitance		-	150	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _{DS} =1A, V _{GEN} =4.5V, R _G =6Ω	-	6	12	ns
t _r	Turn-on Rise Time		-	11	21	
t _{d(OFF)}	Turn-off Delay Time		-	48	87	
t _f	Turn-off Fall Time		-	21	39	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _{DS} =4A	-	13.5	-	nC
Q _{gs}	Gate-Source Charge		-	1.5	-	
Q _{gd}	Gate-Drain Charge		-	4.5	-	

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

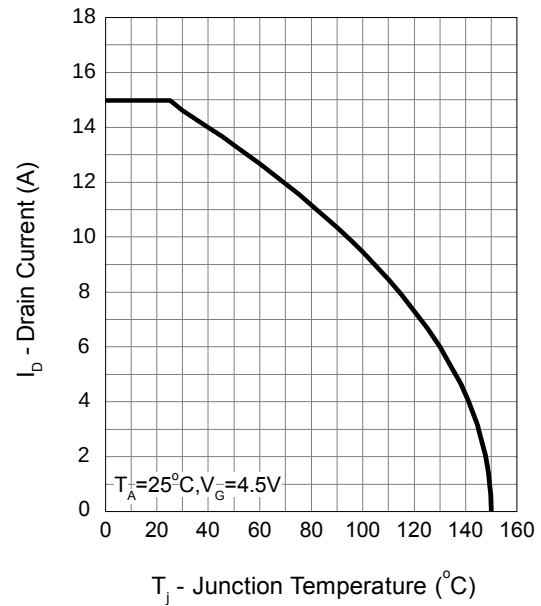
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

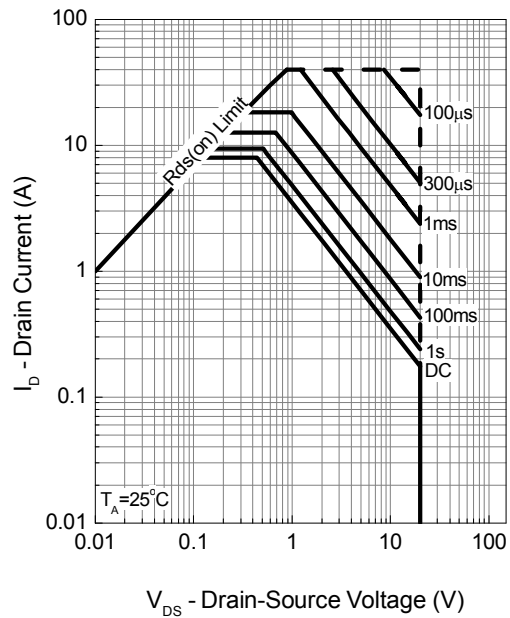
Power Dissipation



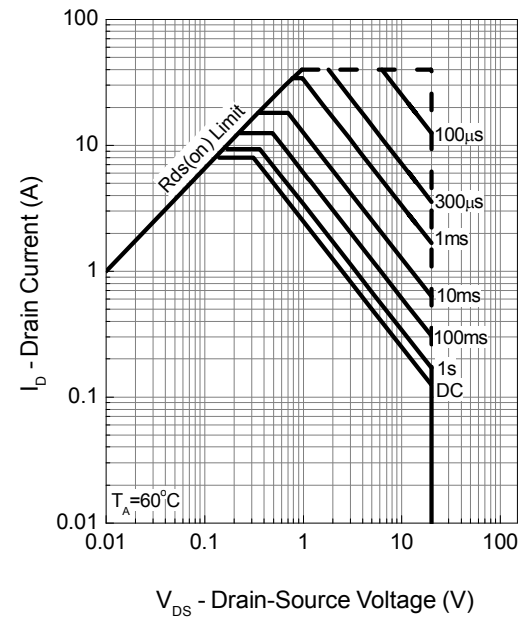
Drain Current



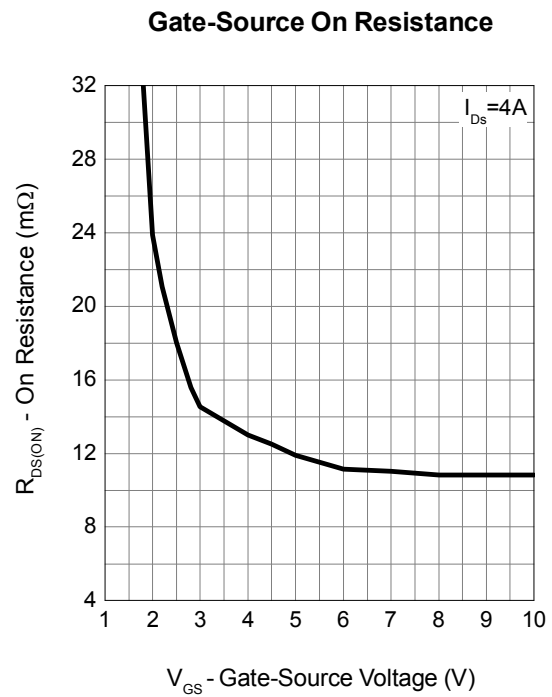
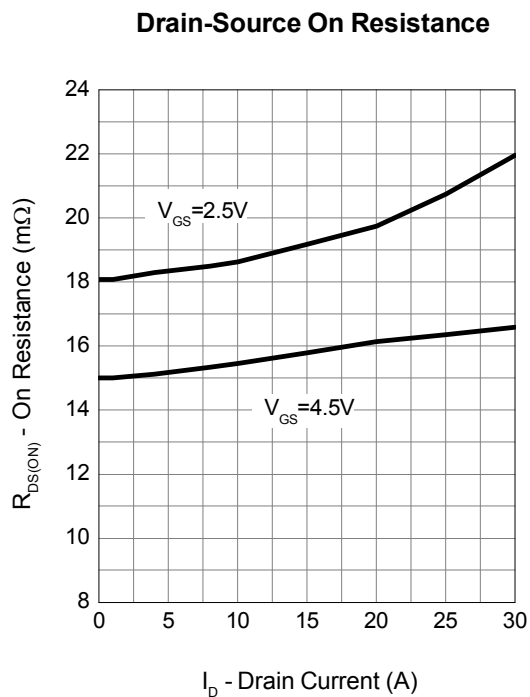
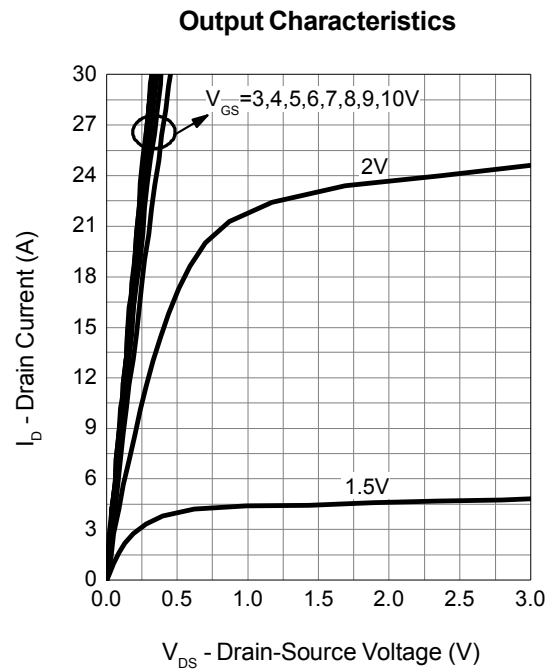
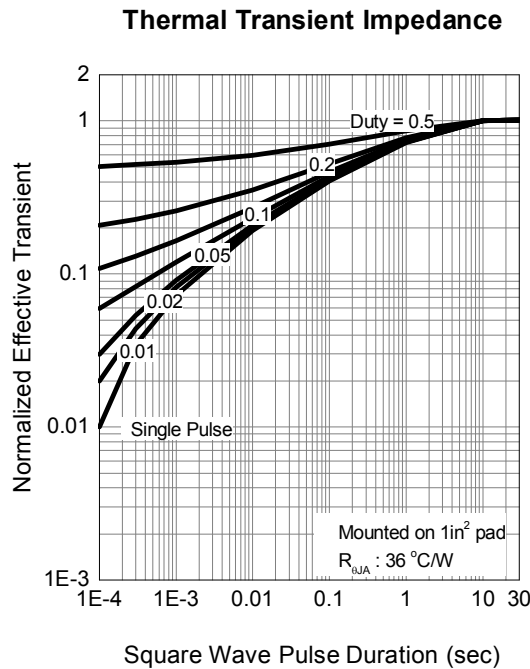
Safe Operation Area ($T_A = 25^{\circ}\text{C}$)



Safe Operation Area ($T_A = 60^{\circ}\text{C}$)

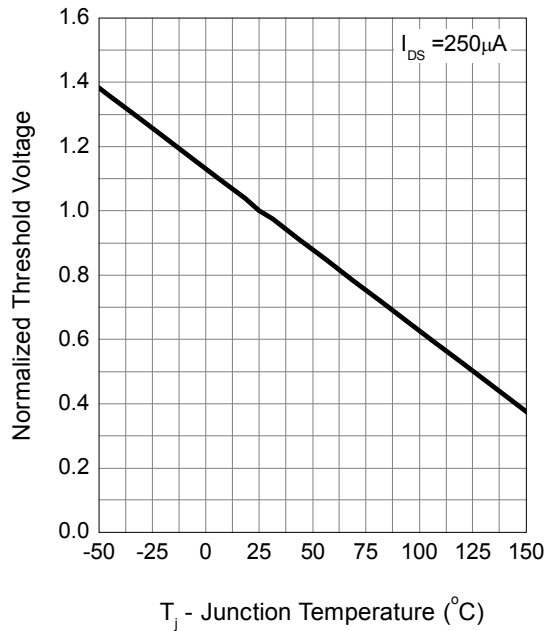


Typical Operating Characteristics (Cont.)

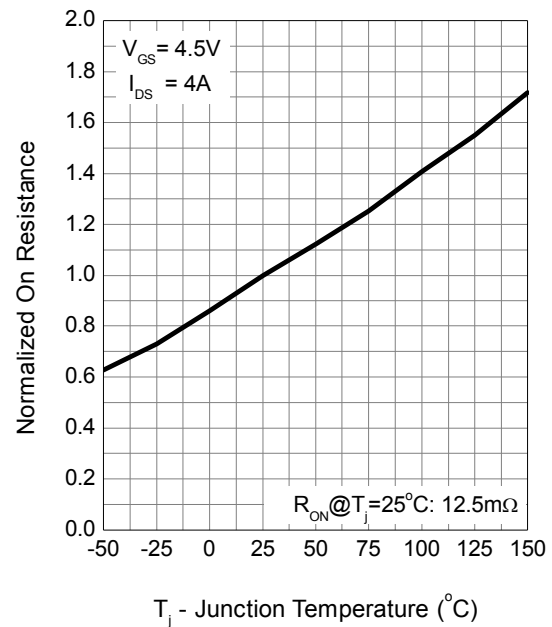


Typical Operating Characteristics (Cont.)

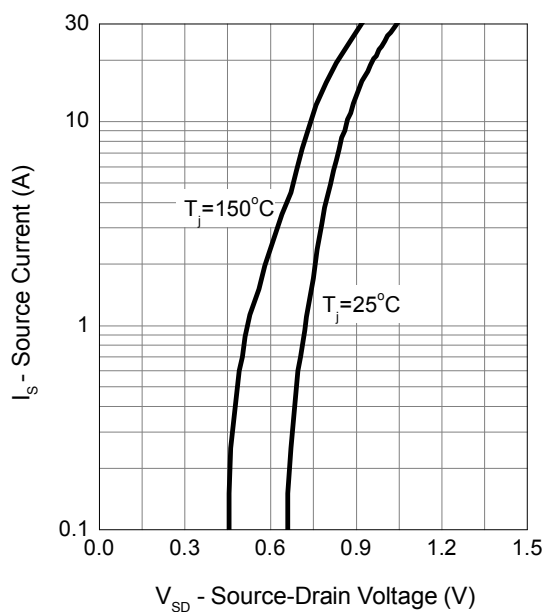
Gate Threshold Voltage



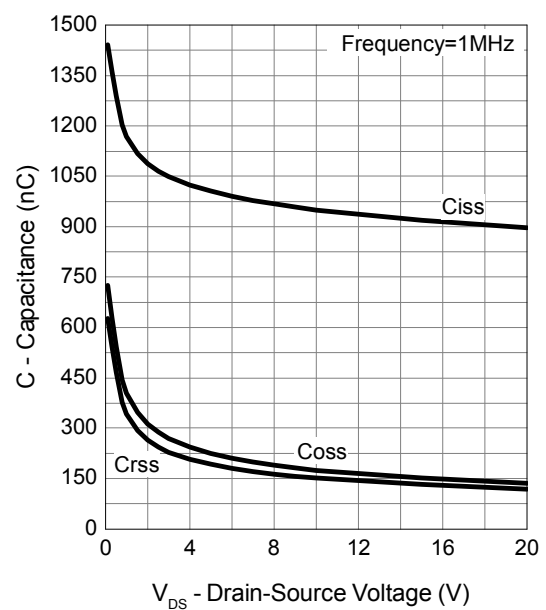
Drain-Source On Resistance



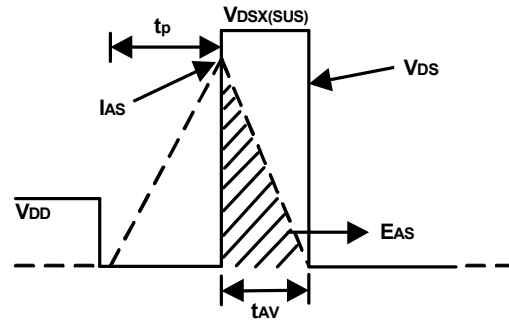
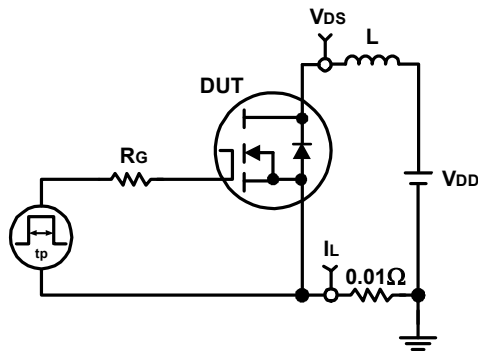
Source-Drain Diode Forward



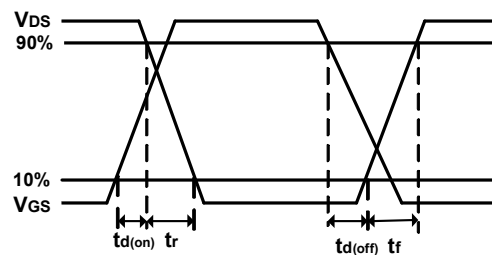
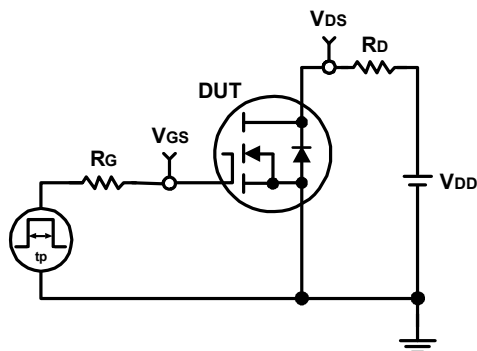
Capacitance



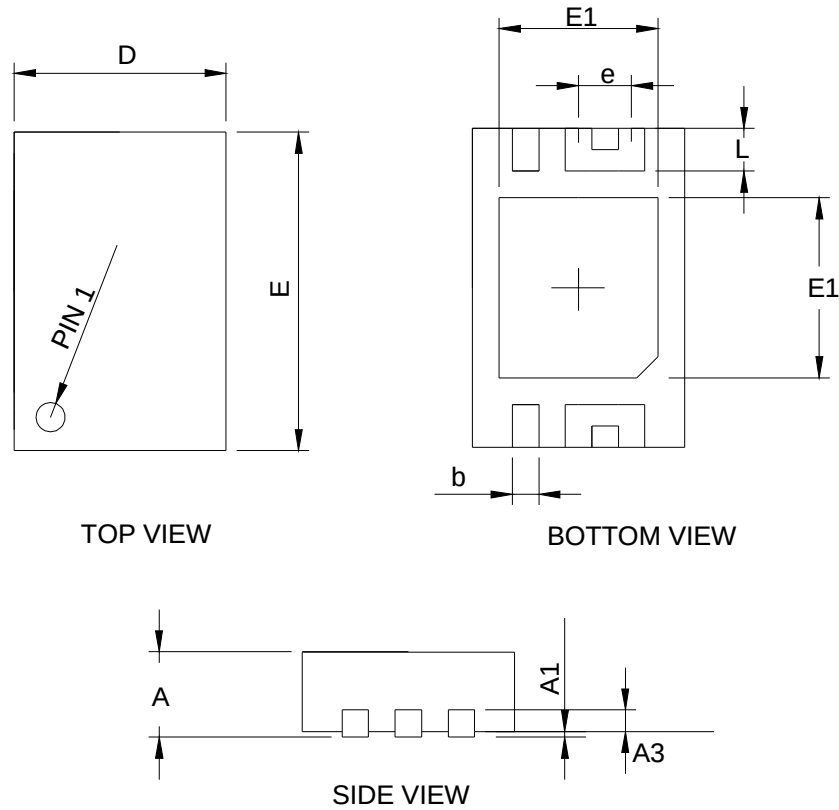
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

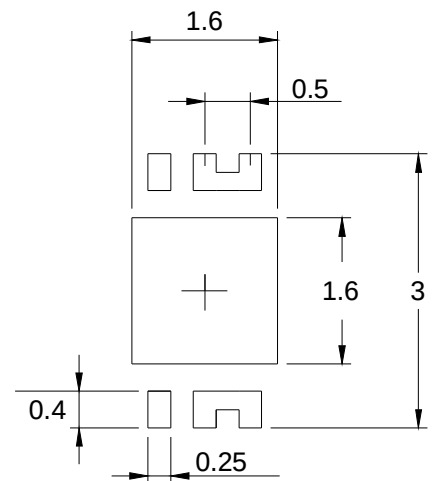


Package Information



SYMBOL	DFN2x3A-6_EP1_S			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.50	0.70	0.028	0.039
A1	0.00	0.05	0.000	0.002
A3	0.203 REF		0.008 REF	
b	0.20	0.30	0.008	0.012
D	1.90	2.10	0.075	0.083
E1	1.60	1.80	0.063	0.071
E	2.90	3.10	0.114	0.122
D1	1.40	1.60	0.055	0.063
e	0.50 BSC		0.02 BSC	
L	0.30	0.50	0.012	0.020

RECOMMENDED LAND PATTERN



UNIT: mm