

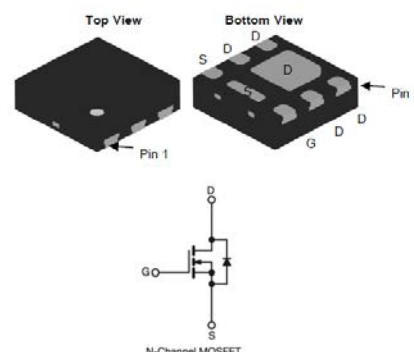
PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(on)} TYP.	I _D
60V	12mΩ@V _{GS} =10V	18A
	17mΩ@V _{GS} =4.5V	

GENERAL DESCRIPTION

- load switch
- battery protection applications

DFN2x2 PACKAGE



APPLICATION

- Case : Molded plastic,DFN2x2
- Polarity : Shown above
- Terminals :Plated terminals,
solderable per
MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame
retardant

Absolute Maximum Ratings @T_A=25°C unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current (Continuous) *AC	$T_C=25^{\circ}C$	I_D	18	A
	$T_C=70^{\circ}C$		18	
Drain Current (Pulse) *B		I_{DM}	40	A
Power Dissipation	$T_C=25^{\circ}C$	P_D	19	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	$^{\circ}C$

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	Steady State	R_{thJC}	6.5	°C/W

Electrical Characteristics @T_A=25°C unless otherwise noted

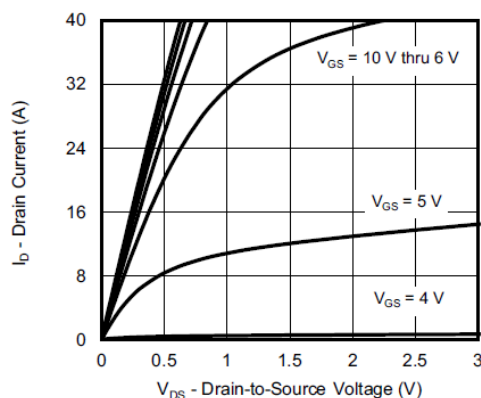
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} = 250μA	1	1.6	2.5	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A	--	12	16	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 10A	--	17	22	mΩ
Diode Forward Voltage	V _{SD}	I _{SD} = 1A , V _{GS} =0V	--	0.74	1.2	V
Diode Forward Current *AC	I _S	T _C =25°C	--	--	15.8	A
Switching						
Total Gate Charge	Q _g	V _{GS} = 30 V, V _{DS} = 10 V, I _{DS} = 9.5 A	--	15.5	--	nC
Gate-Source Charge	Q _{gs}		--	3.6	--	nC
Gate-Drain Charge	Q _{gd}		--	3.6	--	nC
Turn-on Delay Time	t _{d (on)}	V _{DS} = 30V, V _{GEN} = 10 V, R _G = 4.5 Ω, R _L = 3.15 Ω, I _{DS} = 9.5 A	--	6	--	ns
Turn-on Rise Time	t _r		--	23	--	ns
Turn-off Delay Time	t _{d(off)}		--	13	--	ns
Turn-Off Fall Time	t _f		--	18	--	ns
Dynamic						
Input Capacitance	C _{iss}	V _{GS} =30V, V _{DS} = 10V, f=1MHz	--	739	--	pF
Output Capacitance	C _{oss}		--	371	--	pF
Reverse Transfer Capacitance	C _{rss}		--	30	--	pF

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

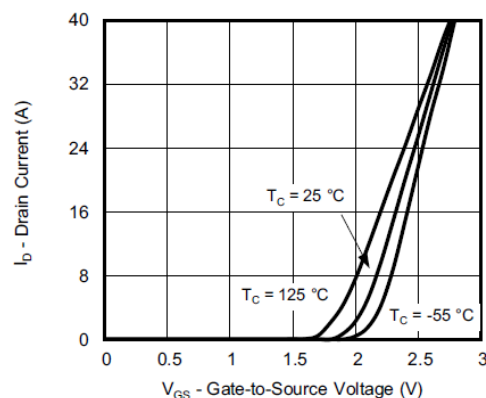
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the $t \leq 10s$ junction to ambient thermal resistance rating, Package limited 18A.

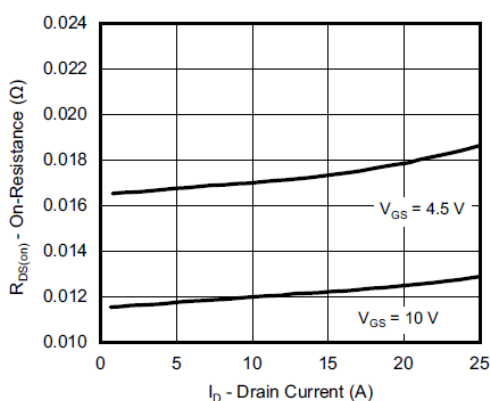
Typical Performance Characteristics (TJ = 25 °C, unless otherwise noted)



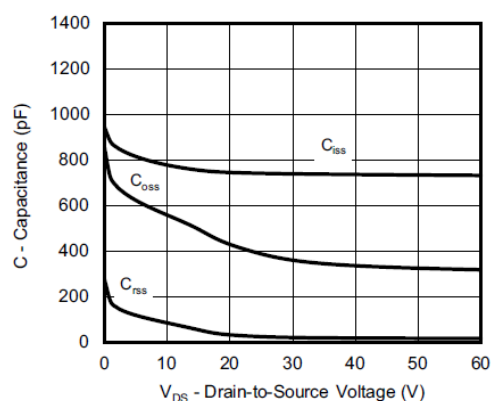
Output Characteristics



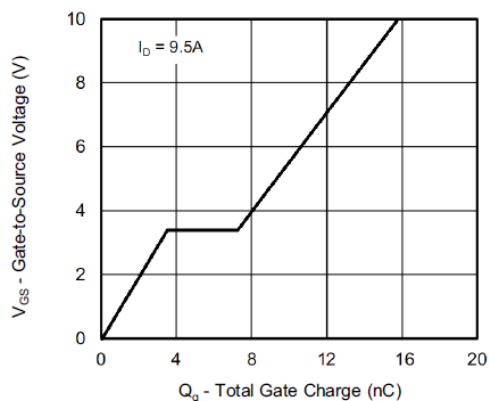
Transfer Characteristics



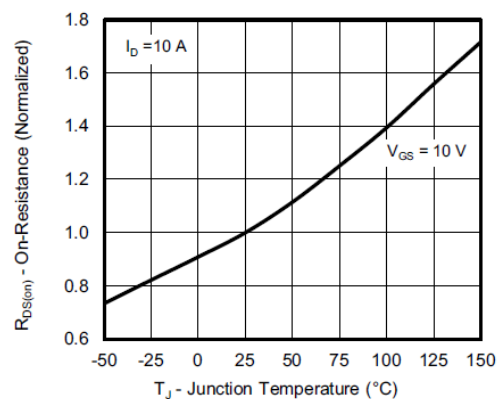
On-Resistance vs. Drain Current and Gate Voltage



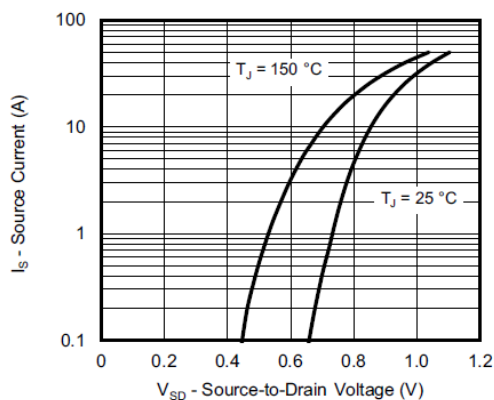
Capacitance



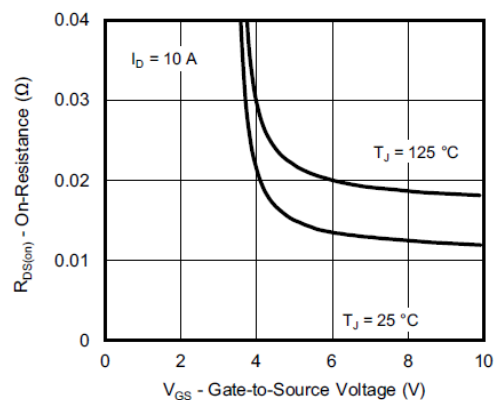
Gate Charge



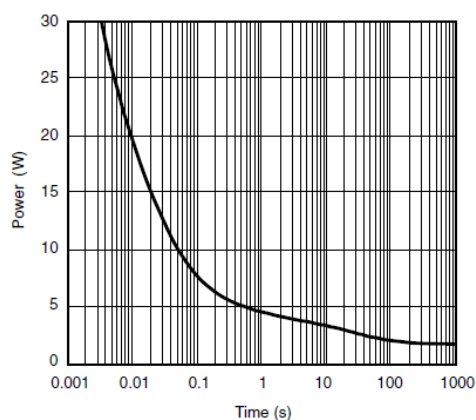
On-Resistance vs. Junction Temperature



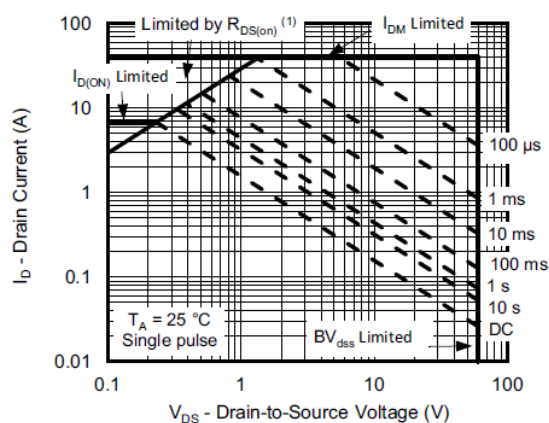
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

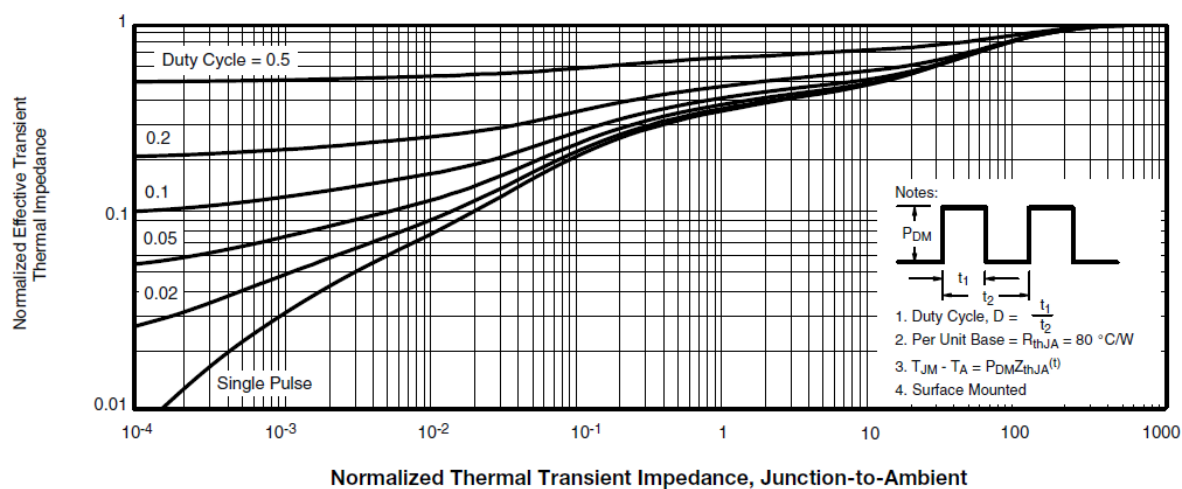


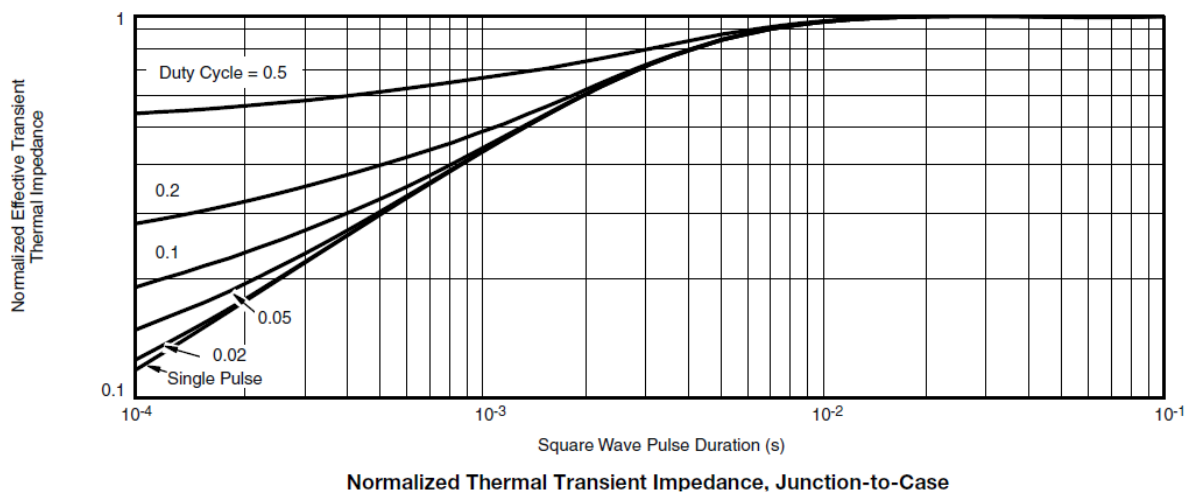
Single Pulse Power, Junction-to-Ambient



(1) $V_{GS} > \text{minimum } V_{GS} \text{ at which } R_{DS(on)} \text{ is specified}$

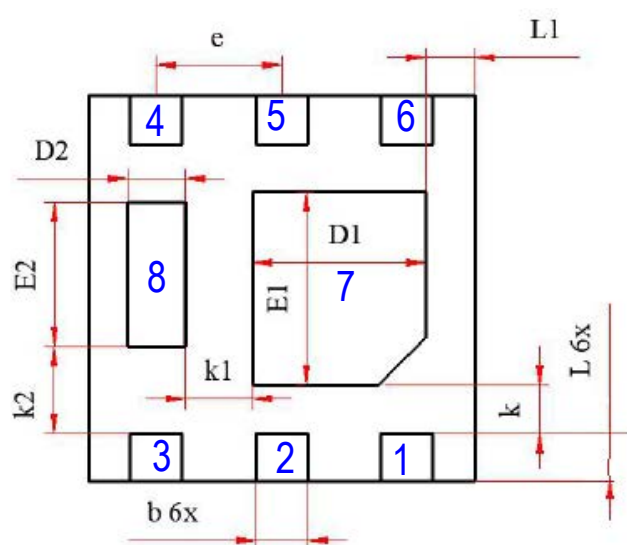
Safe Operating Area, Junction-to-Ambient



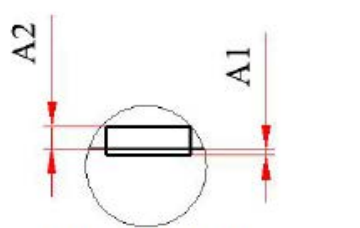
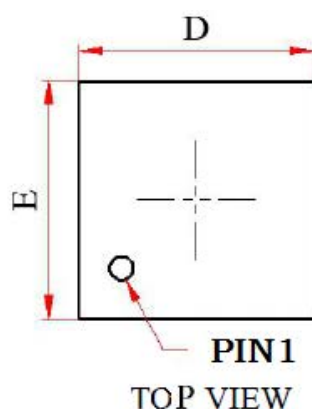


Outline Drawing

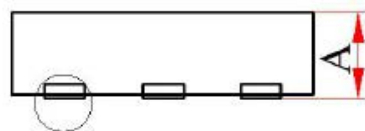
DFN2x2-6L(M)



BOTTOM VIEW



DETAIL "A"



— Detail "A"
SIDE VIEW

Symbol	Dimension In Millimeters			Dimension In Inches		
	Normal	Min	Max	Normal	Min	Max
A	--	0.500	0.600	--	0.020	0.024
A1	--	--	0.005	--	--	0.000
A2	--	0.050	0.150	--	0.002	0.006
D	2.000	1.950	2.070	0.079	0.077	0.081
E	2.000	1.950	2.070	0.079	0.077	0.081
D1	0.900	0.800	1.000	0.035	0.031	0.039
E1	1.000	0.900	1.100	0.039	0.035	0.043
D2	0.300	0.200	0.400	0.012	0.008	0.016
E2	0.750	0.650	0.850	0.030	0.026	0.033
b	0.270	0.200	0.340	0.011	0.008	0.013
L	0.250	0.200	0.350	0.010	0.008	0.014
L1	0.250	0.200	0.300	0.010	0.008	0.012
e	0.650 BSC			0.026 BSC		
k	0.250 REF			0.010 REF		
k1	0.350 REF			0.014 REF		
k2	0.450 REF			0.018 REF		

Rev.B-1

Suggested Soldering Pad Layout	DFN2*2-6L
TOP view Dimensions in inches and (millimeters)	
RevA	

Device PN	Marking	Packing
SEM60N18 -T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	6904 ⁽⁴⁾	Tape&Reel: 3 Kpcs/Reel

(2) Halogen free product for packing code suffix “H”

(3) WS : Willas brand abbreviation, Label Type does not display

(4) There may be additional marking, which relates to the lot trace code information (data code and vendor code), the logo or the environmental category on the device

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