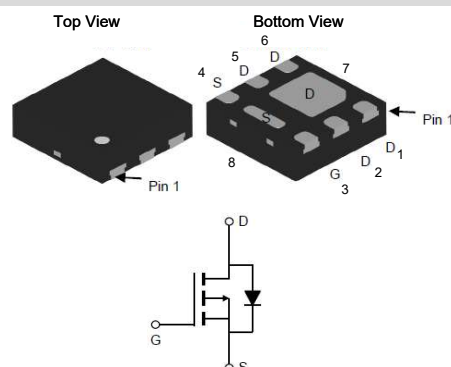


**P -Channel Enhancement Mode Power MOSFET****PRIMARY CHARACTERISTICS**

BV _{DSS}	R _{DS(on)} TYP.	I _D
-30V	27mΩ@V _{GS} =-4.5V	-12A
	21mΩ@V _{GS} =-10V	

GENERAL DESCRIPTION

- load switch
- battery protection applications
- Industrial application

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}	-30	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current (Continuous) *AC	T _C =25°C	I _D	-12	A
	T _C =70°C		-12	
Drain Current (Pulse) *B		I _{DM}	-32	A
Power Dissipation	T _C =25°C	P _D	17.9	W
Operating Temperature/ Storage Temperature		T _J /T _{STG}	-55~150	°C

● Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	t ≤ 5s	R _{thJA}	37	°C/W
Maximum Junction-to-case(drain)	Steady State	R _{thJC}	7	°C/W



P -Channel Enhancement Mode Power MOSFET

● 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	-30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, 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 = -8A	--	15.5	21	mΩ
	R _{DS(on)}	V _{GS} = -4.5V, I _D = -6A	--	21	27	mΩ
Diode Forward Voltage	V _{SD}	I _{SD} = -1A , V _{GS} =0V	--	-0.76	-1	V
Diode Forward Current *AC	I _S	T _A =25°C	--	--	-3.6	A
Switching						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-8A	--	17	--	nC
Gate-Source Charge	Q _{gs}		--	3.7	--	nC
Gate-Drain Charge	Q _{gd}		--	3	--	nC
Turn-on Delay Time	t _{d (on)}	V _{GS} =-4.5V, V _{DS} =- 15V, R _L =1.8Ω, R _{GEN} =1Ω	--	28	--	ns
Turn-on Rise Time	t _r		--	152	--	ns
Turn-off Delay Time	t _{d(off)}		--	37	--	ns
Turn-Off Fall Time	t _f		--	22	--	ns
Dynamic						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} = -15V, f=1MHz	--	1550	--	pF
Output Capacitance	C _{oss}		--	460	--	pF
Reverse Transfer Capacitance	C _{rss}		--	52	--	pF

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

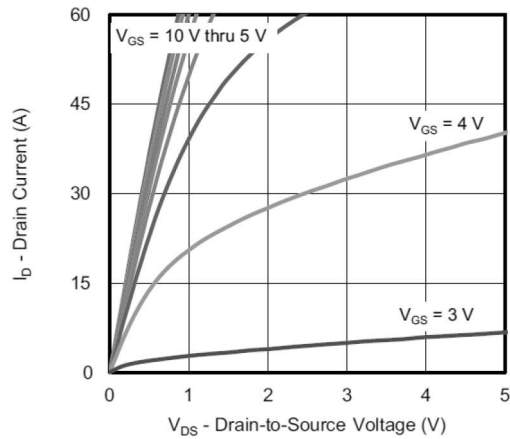
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t_s ≤ 5s junction to ambient thermal resistance rating. Package limited 12A.

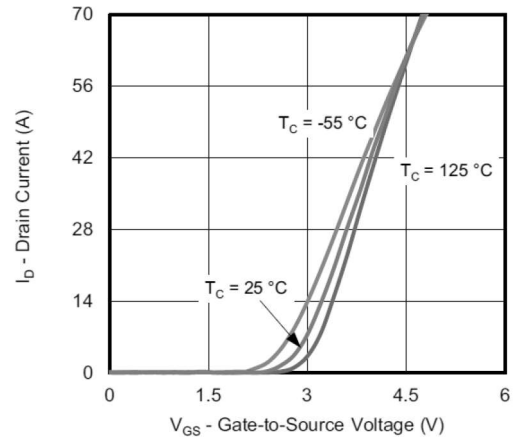


P -Channel Enhancement Mode Power MOSFET

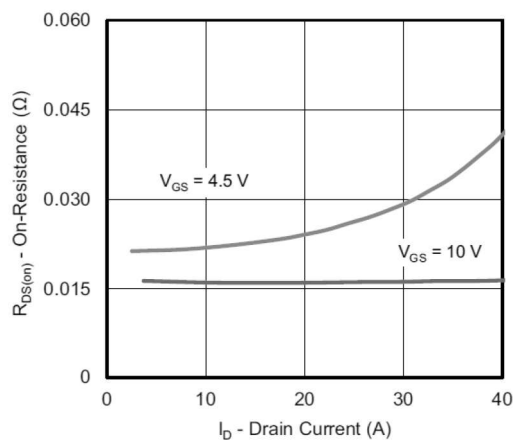
- Typical Performance Characteristics (($T_J = 25^\circ\text{C}$, unless otherwise noted))



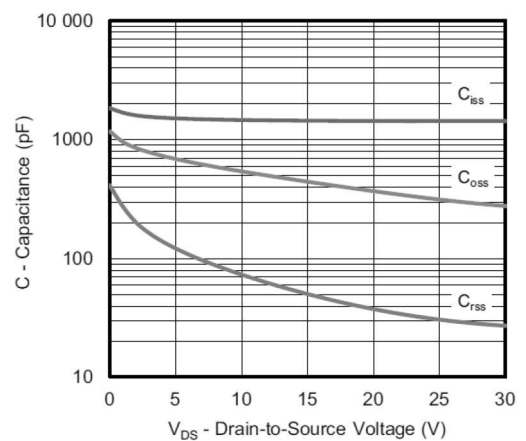
Output Characteristics



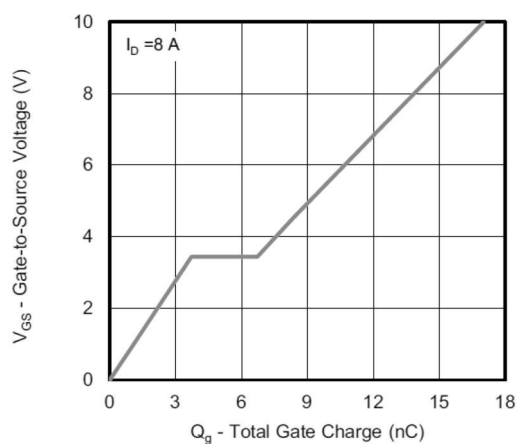
Transfer Characteristics



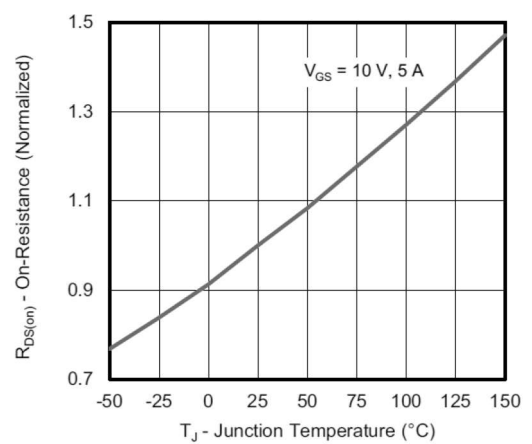
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



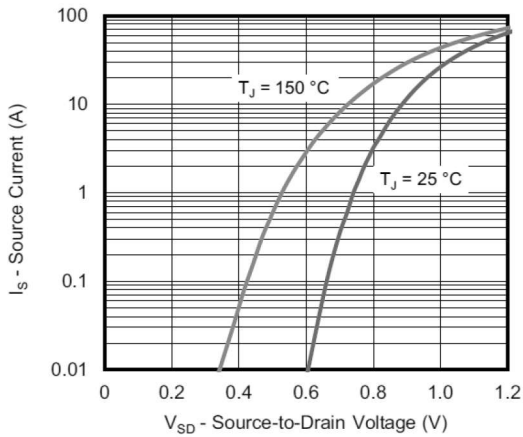
Gate Charge



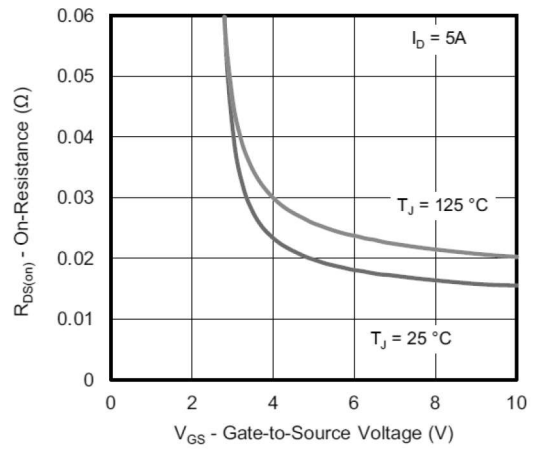
On-Resistance vs. Junction Temperature



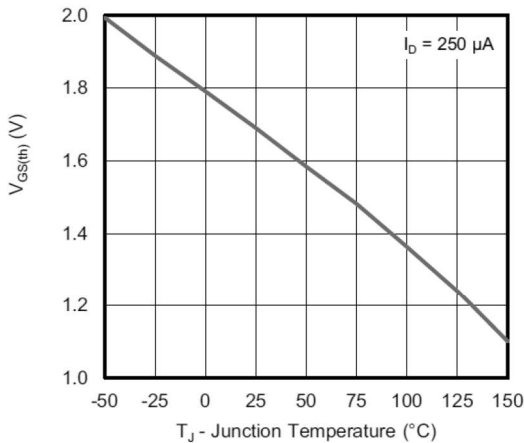
P-Channel Enhancement Mode Power MOSFET



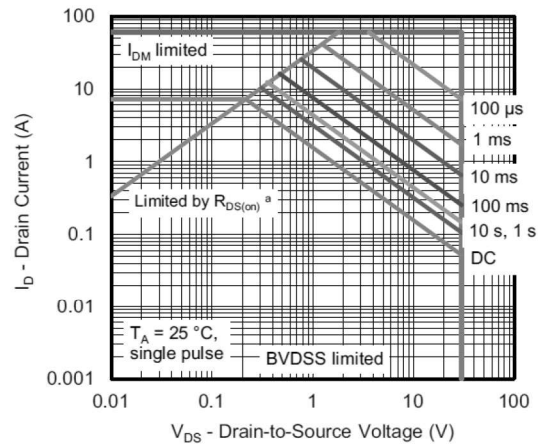
Source-Drain Diode Forward Voltage



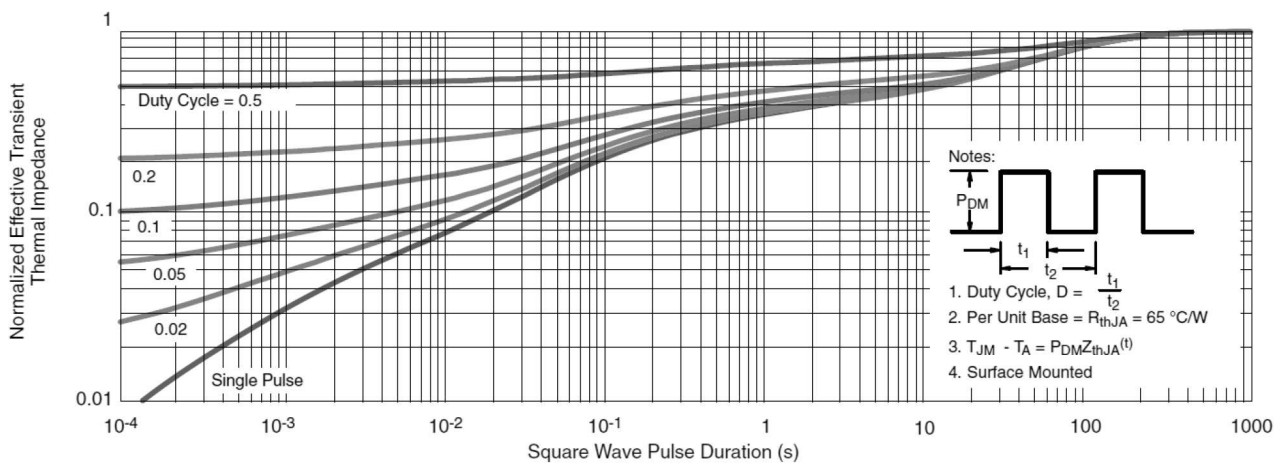
On-Resistance vs. Gate-to-Source Voltage



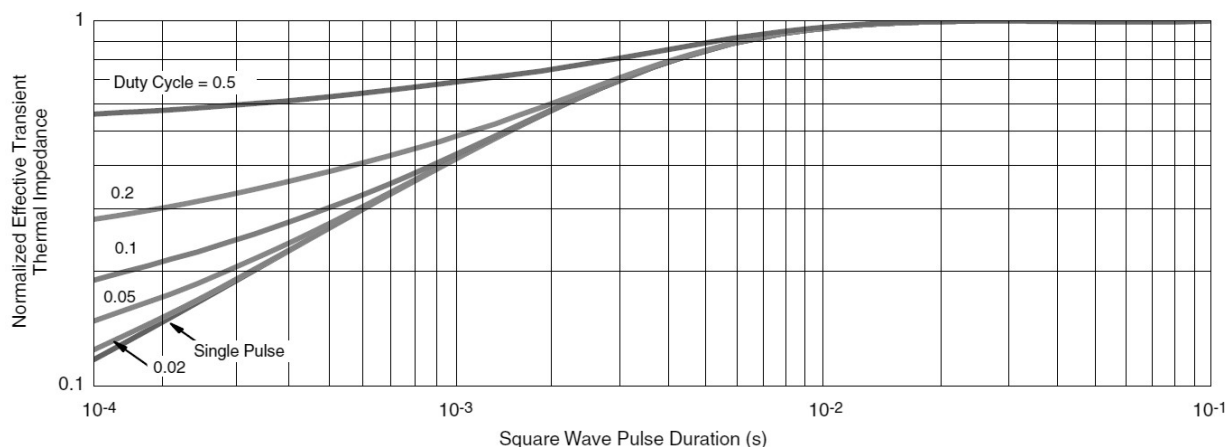
Threshold Voltage



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

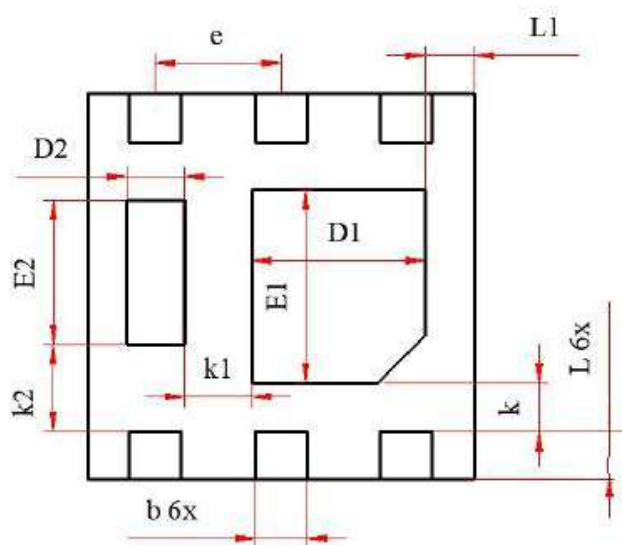
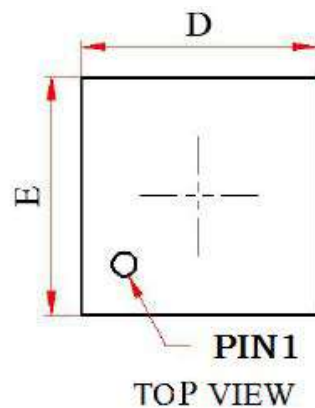
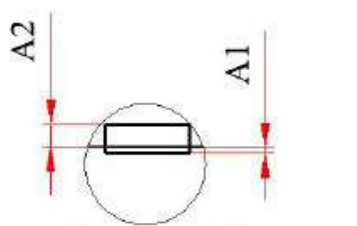
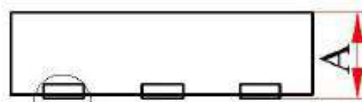
**P -Channel Enhancement Mode Power MOSFET**

Normalized Thermal Transient Impedance, Junction-to-Case



Outline Drawing

DFN2x2-6L(M)

**BOTTOM VIEW****PIN 1
TOP VIEW****DETAIL "A"****Detail "A"
SIDE VIEW**

Symbol	Dimension In Millimeters			Dimension In Inches		
	Normal	Min	Max	Normal	Min	Max
	--	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

Ordering Information:

Device PN	Marking ⁽⁴⁾	Packing
SEM30P10-T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	4419	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) Packing code suffix "G" for RoHS product ; Packing code Suffix "H" for halogen free product.
All materials and products supplied comply with the U.S. Toxic Substances Control Act statement, PBT Chemicals.

(3) 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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