SamHop Microelectronics Corp.

SP8601

Ver 2.5

Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	7.2A	17.5 @ V_{GS}=4.5V
		18.5 @ V_{GS}=4.0V
		20.0 @ V_{GS}=3.7V
		24.5 @ V_{GS}=3.1V
		27.0 @ V_{GS}=2.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Suface Mount Package.
- ESD Protected.

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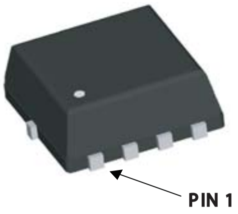
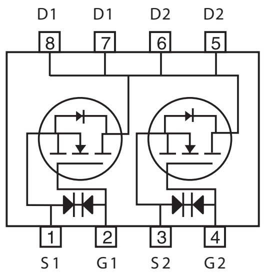




ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Symbol	Parameter		Limit	Units
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Drain Current-Continuous [c]	T_A=25°C	7.2	A
		T_A=70°C	5.8	A
I_{DM}	-Pulsed [a c]		43	A
P_D	Maximum Power Dissipation	T_A=25°C	1.47	W
		T_A=70°C	0.94	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 150	°C

THERMAL CHARACTERISTICS

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	85	°C/W

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V , V_{GS}=0V			1	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}= ±8V , V_{DS}=0V			±1	uA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=1.0mA	0.5	0.95	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V , I_D=1.8A	12.0	14.5	17.5	m ohm
		V_{GS}=4.0V , I_D=1.8A	12.5	15.0	18.5	m ohm
		V_{GS}=3.7V , I_D=1.8A	13.5	16.0	20.0	m ohm
		V_{GS}=3.1V , I_D=1.8A	14.5	18.5	24.5	m ohm
		V_{GS}=2.5V , I_D=1.8A	18.0	22.0	27.0	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=3.6A		18		S
DYNAMIC CHARACTERISTICS [b]						
C_{ISS}	Input Capacitance	V_{DS}=10V,V_{GS}=0V f=1.0MHz		320		pF
C_{OSS}	Output Capacitance			106		pF
C_{RSS}	Reverse Transfer Capacitance			92		pF
SWITCHING CHARACTERISTICS [b]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=16V I_D=3.6A V_{GS}=4.0V R_{GEN}= 6 ohm		13.5		ns
t_r	Rise Time			30		ns
$t_{D(OFF)}$	Turn-Off Delay Time			19		ns
t_f	Fall Time			13.5		ns
Q_g	Total Gate Charge	V_{DS}=16V,I_D=7.2A, V_{GS}=4.0V		7.2		nC
Q_{gs}	Gate-Source Charge			1.4		nC
Q_{gd}	Gate-Drain Charge			4		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=7.2A		0.89	1.2	V

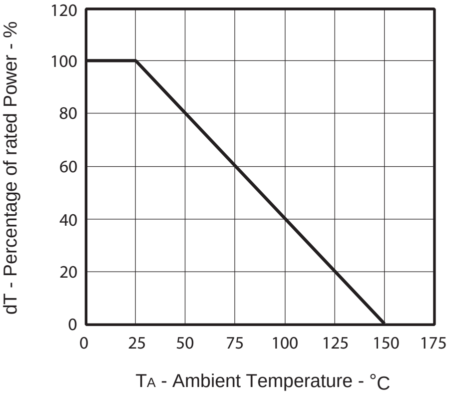
Notes

a.Pulse Test:Pulse Width ≤ 10us, Duty Cycle ≤ 1%.

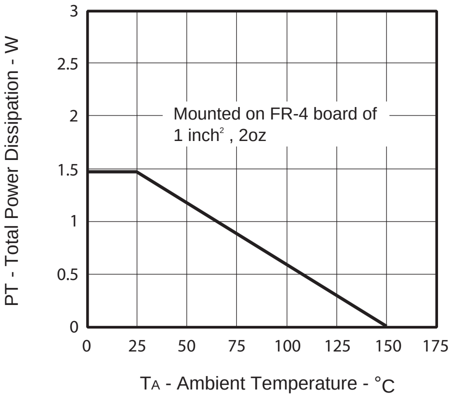
b.Guaranteed by design, not subject to production testing.

c.Drain current limited by maximum junction temperature.

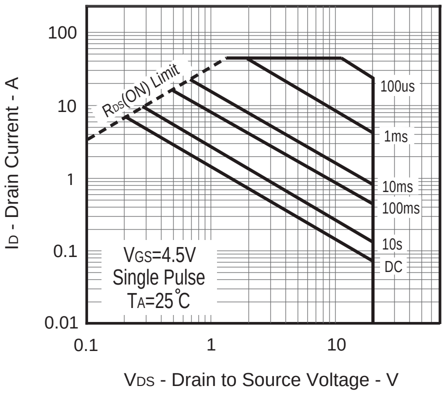
d.Mounted on FR4 Board of 1 inch^2 , 2oz.



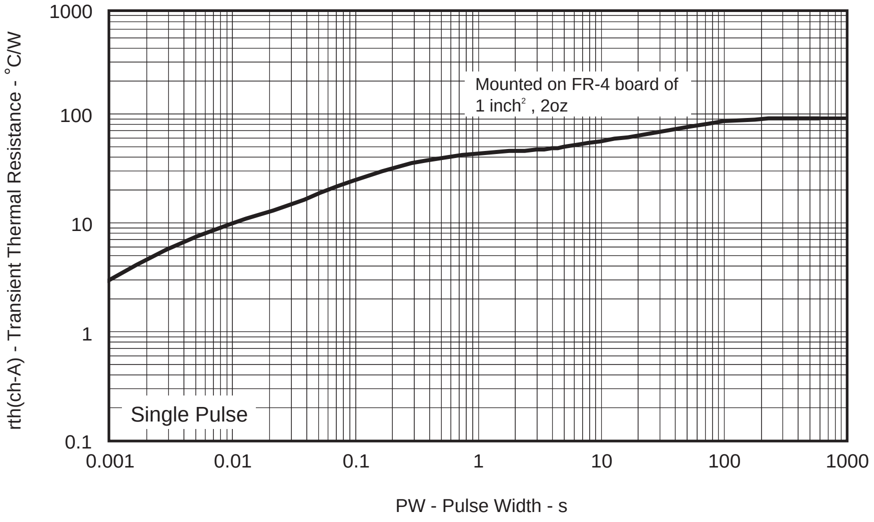
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE

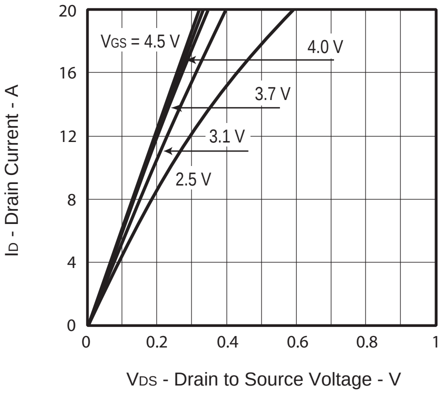


FORWARD BIAS SAFE OPERATING AREA

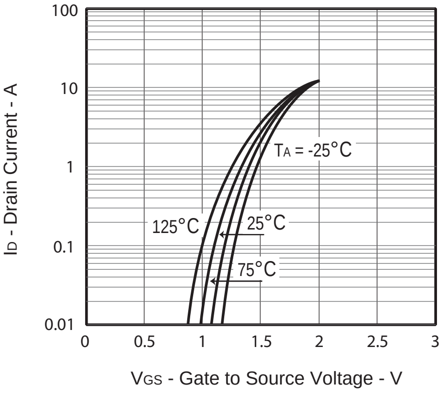


TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

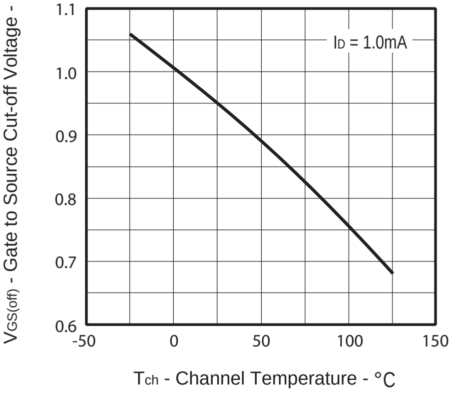
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



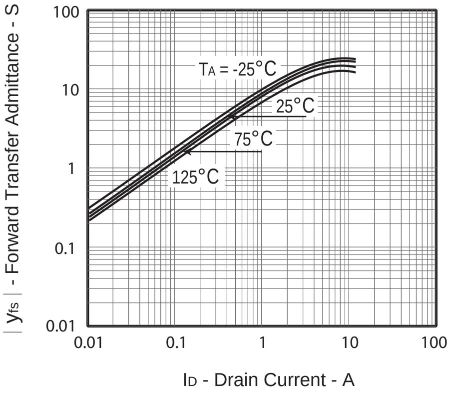
FORWARD TRANSFER CHARACTERISTICS



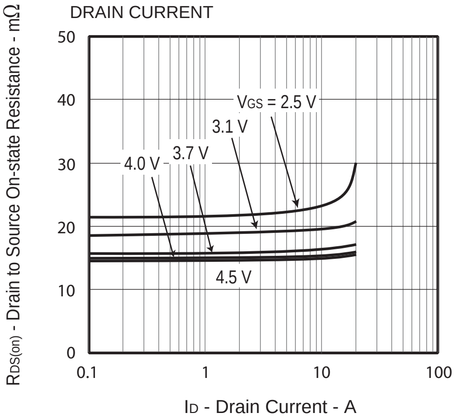
GATEBTO SOURE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



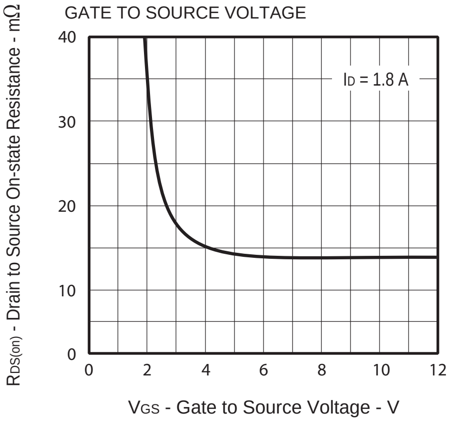
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT

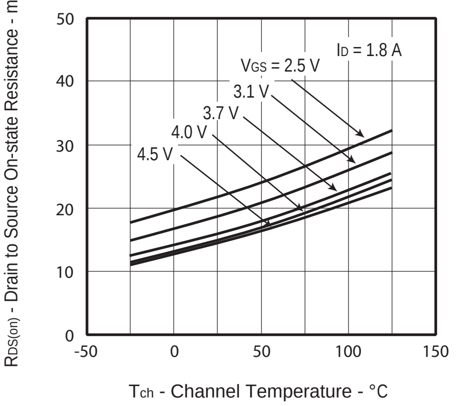


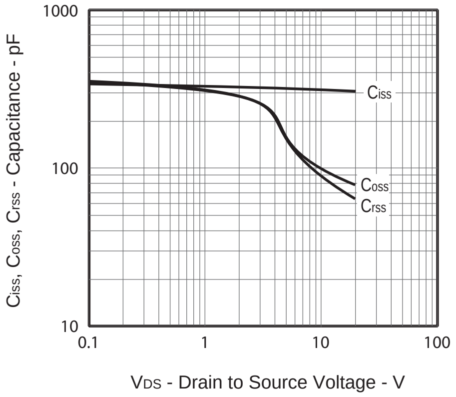
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT

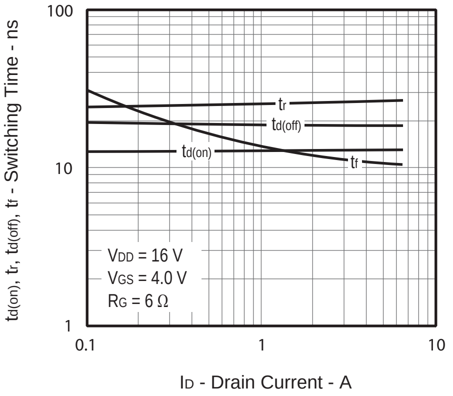


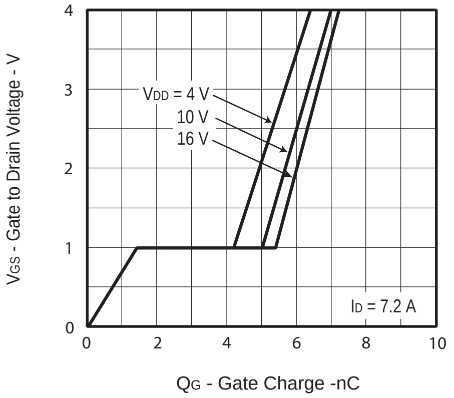
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE

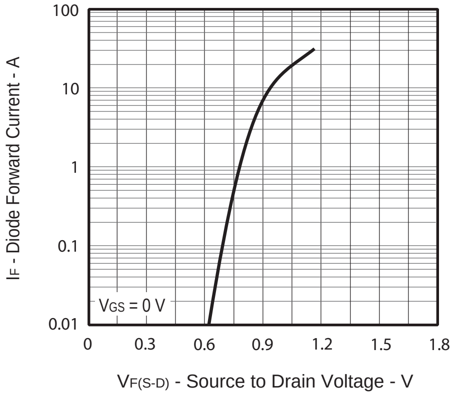



DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE


CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE


SWITCHING CHARACTERISTICS


DYNAMIC INPUT CHARACTERISTICS


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

PACKAGE OUTLINE DIMENSIONS

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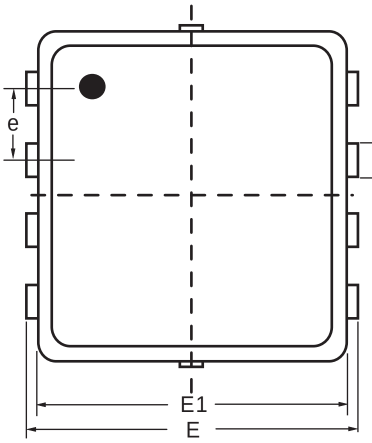
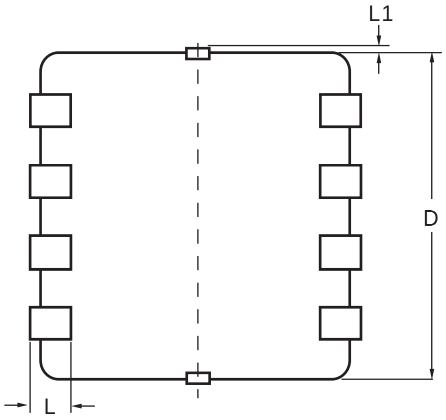
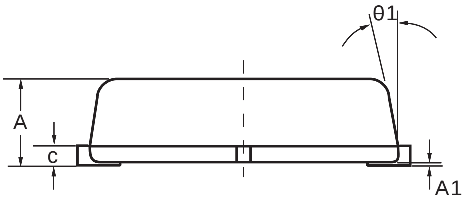


TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOLS	MILLIMETERS		
	MIN	NOM	MAX
A	0.700	0.800	0.900
A1	0.000	——	0.050
b	0.240	0.300	0.350
c	0.080	0.152	0.250
D	2.800	2.900	3.000
E	2.700	2.800	2.900
E1	2.200	2.300	2.400
e	0.650 BSC		
L	0.200	0.375	0.450
L1	0.000	——	0.100
θ1	0°	10°	12°

TOP MARKING DEFINITION

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