SamHop Microelectronics Corp.

SP2030

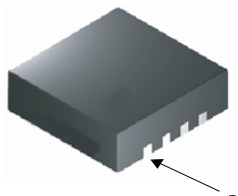
Ver 2.1

Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	46A	5.5 @ VGS=4.5V
		6.5 @ VGS=3.9V
		7.0 @ VGS=3.1V
		7.5 @ VGS=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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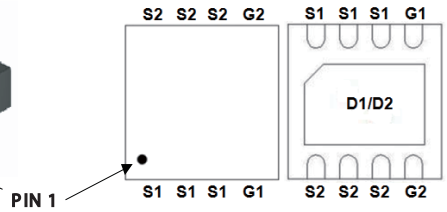
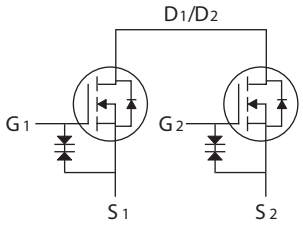




ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

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	46	A
		T_A=70°C	36.8	A
I_{DM}	-Pulsed [a c]		96	A
P_D	Maximum Power Dissipation	T_A=25°C	15.6	W
		T_A=70°C	10.0	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 150	°C

THERMAL CHARACTERISTICS

$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	8	°C/W

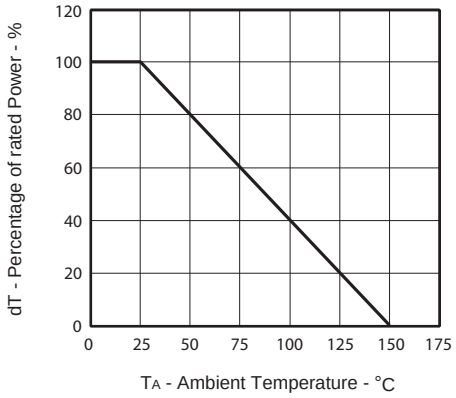
ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise noted)

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}= ±12V , V_{DS}=0V			±10	uA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=1mA	0.5	0.8	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V , I_D=12A	3.0	4.0	5.5	m ohm
		V_{GS}=3.9V , I_D=12A	3.5	4.5	6.5	m ohm
		V_{GS}=3.1V , I_D=12A	4.0	5.0	7.0	m ohm
		V_{GS}=2.5V , I_D=12A	4.5	6.0	7.5	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=12A		60		S
SWITCHING CHARACTERISTICS [b]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=16V I_D=12A V_{GS}=4.5V R_{GEN}=6 ohm		368		ns
t_r	Rise Time			1388		ns
$t_{D(OFF)}$	Turn-Off Delay Time			4472		ns
t_f	Fall Time			3016		ns
Q_g	Total Gate Charge	V_{DS}=16V,I_D=12A,V_{GS}=4.5V		14		nC
Q_{gs}	Gate-Source Charge	V_{DS}=16V,I_D=12A, V_{GS}=4.5V		2.8		nC
Q_{gd}	Gate-Drain Charge			6.6		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=23A		0.82	1.2	V

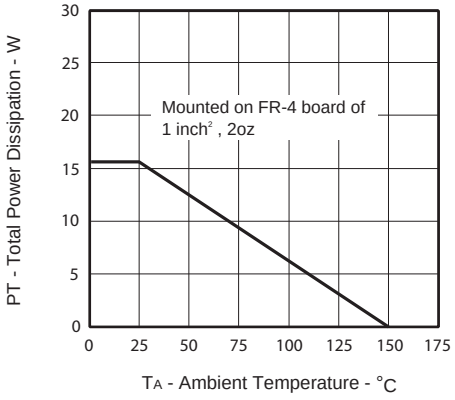
Notes

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.

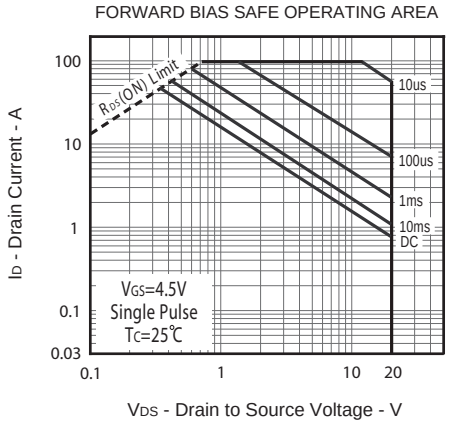
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



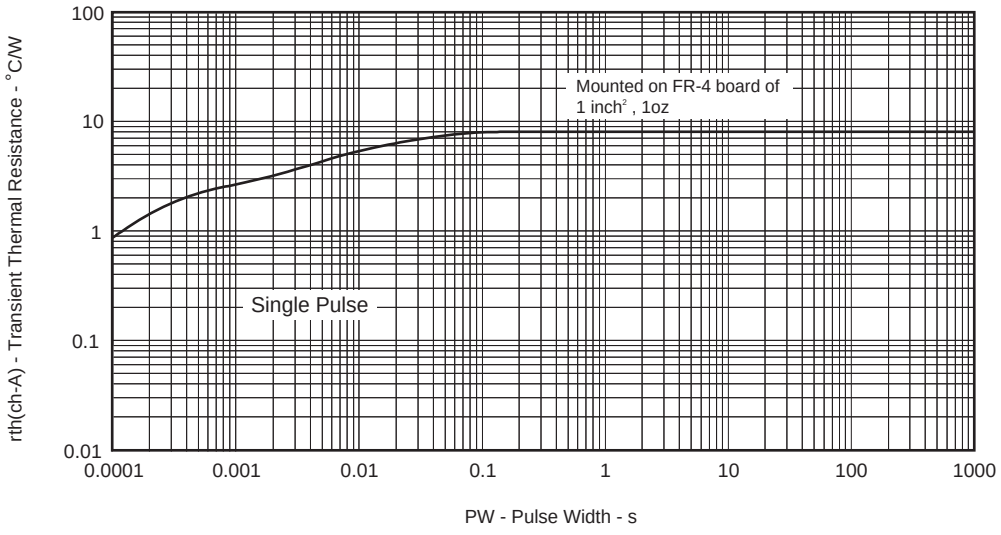
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



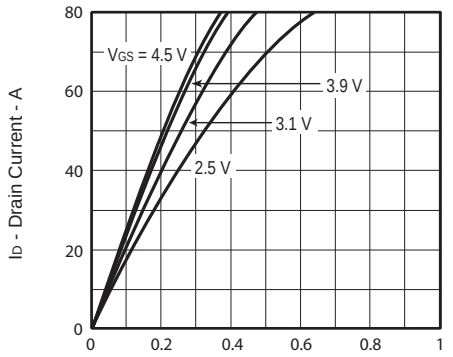
FORWARD BIAS SAFE OPERATING AREA



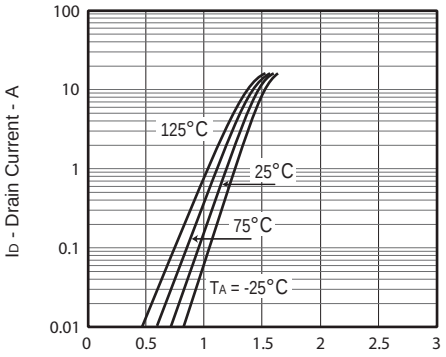
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



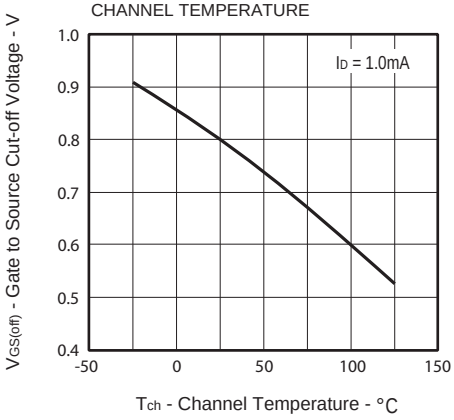
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



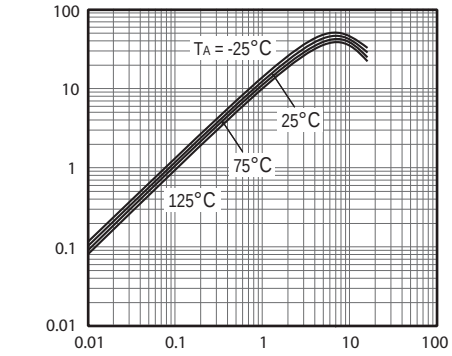
FORWARD TRANSFER CHARACTERISTICS



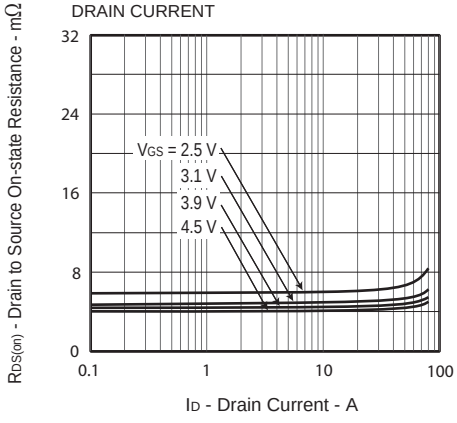
GATEBTO SOURE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



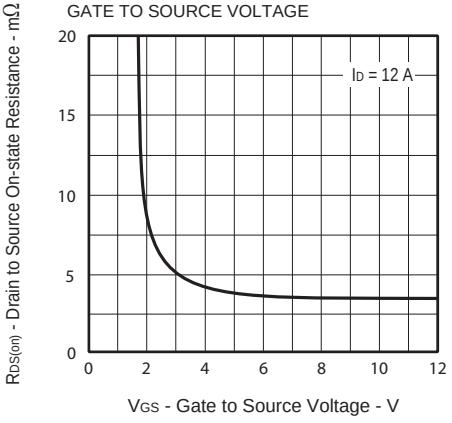
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



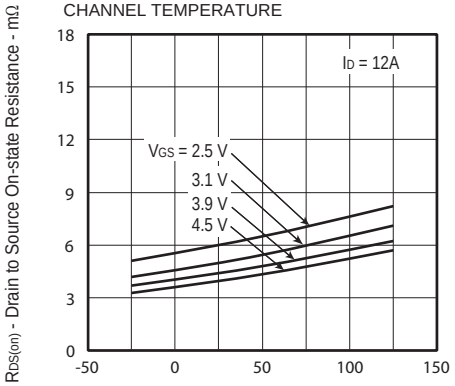
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT



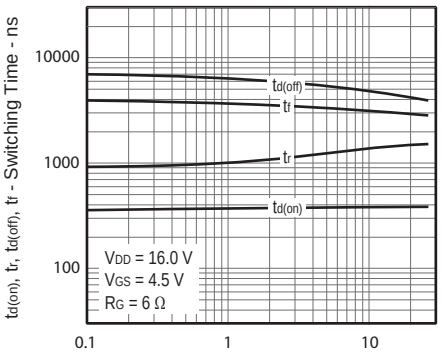
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



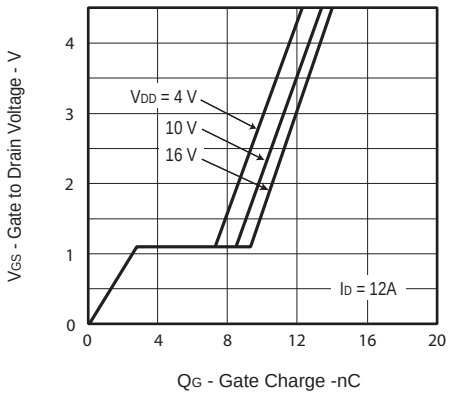
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



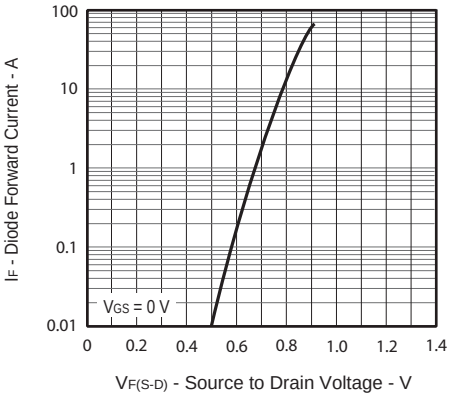
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



PACKAGE OUTLINE DIMENSIONS

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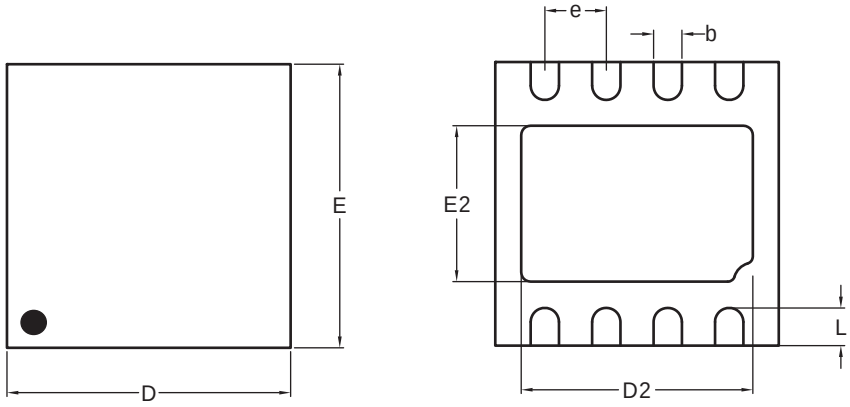
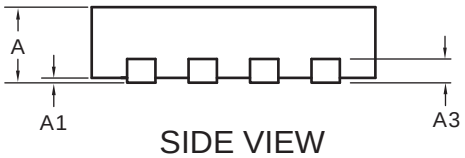


TOP VIEW

BOTTOM VIEW



SIDE VIEW

SYMBOLS	MILLIMETERS		
	MIN	NOM	MAX
A	0.700	0.750	0.800
A1	0.000	——	0.050
A3		0.200 REF.	
b	0.250	0.300	0.350
D	2.950	3.000	3.050
D2	2.300	2.450	2.550
E	2.950	3.000	3.050
E2	1.500	1.650	1.750
e		0.650 BSC	
L	0.300	0.400	0.500

TOP MARKING DEFINITION

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