SamHop Microelectronics Corp.

SP8255

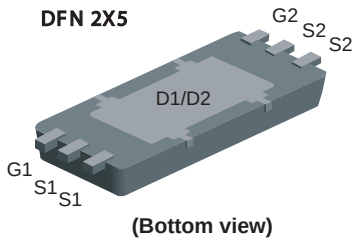
Ver 1.1

Dual N-Channel Enhancement Mode Field Effect Transistor

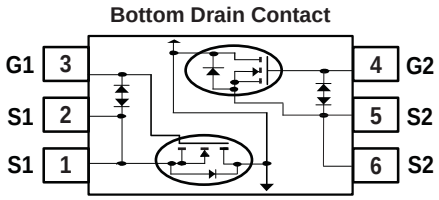
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
20V	7A	15.0 @ VGS=4.5V
		16.0 @ VGS=4.0V
		16.5 @ VGS=3.7V
		18.0 @ VGS=3.1V
		23.0 @ VGS=2.5V

FEATURES

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



(Bottom view)



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 [a c]	T_A=25°C	7	A
		T_A=70°C	5.6	A
I_{DM}	-Pulsed [c]		34	A
P_D	Maximum Power Dissipation [a]	T_A=25°C	1.67	W
		T_A=70°C	1.07	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	75	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	5.5	°C/W

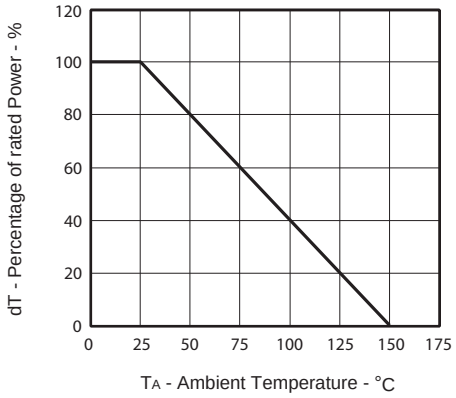
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

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}= ±12V , V_{DS}=0V			±10	uA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=1.0mA	0.5	0.9	1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V , I_D=3.5A	10.0	12.5	15.0	m ohm
		V_{GS}=4.0V , I_D=3.5A	10.5	13.0	16.0	m ohm
		V_{GS}=3.7V , I_D=3.5A	11.0	13.5	16.5	m ohm
		V_{GS}=3.1V , I_D=3.5A	11.5	14.5	18.0	m ohm
		V_{GS}=2.5V , I_D=3.5A	13.0	18.0	23.0	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=3.5A		22		S
DYNAMIC CHARACTERISTICS [b]						
C_{ISS}	Input Capacitance	V_{DS}=10V,V_{GS}=0V f=1.0MHz		335		pF
C_{OSS}	Output Capacitance			136		pF
C_{RSS}	Reverse Transfer Capacitance			62		pF
SWITCHING CHARACTERISTICS [b]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=16V I_D=3.5A V_{GS}=4.5V R_{GEN}=6 ohm		60		ns
t_r	Rise Time			210		ns
$t_{D(OFF)}$	Turn-Off Delay Time			675		ns
t_f	Fall Time			465		ns
Q_g	Total Gate Charge	V_{DS}=16V,I_D=7A, V_{GS}=4.5V		8		nC
Q_{gs}	Gate-Source Charge			1.7		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=7A		0.87	1.3	V

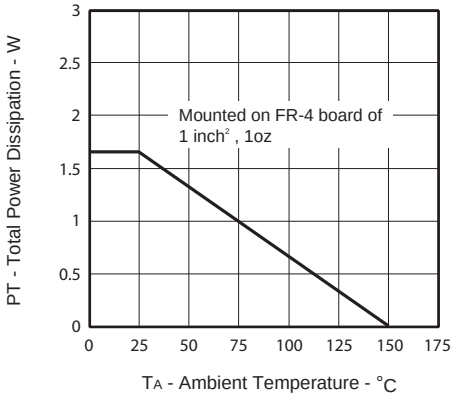
Notes

a.Surface Mounted on FR4 Board of 1 $inch^2$, 1oz.
b.Guaranteed by design, not subject to production testing.
c.Drain current limited by maximum junction temperature.

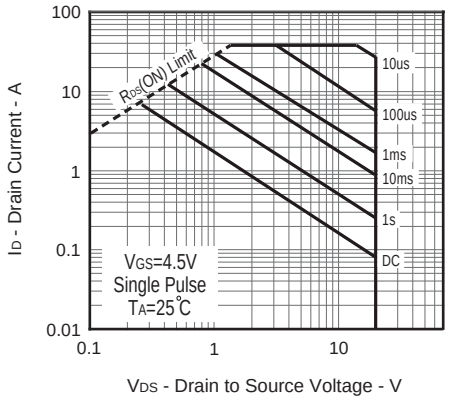
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



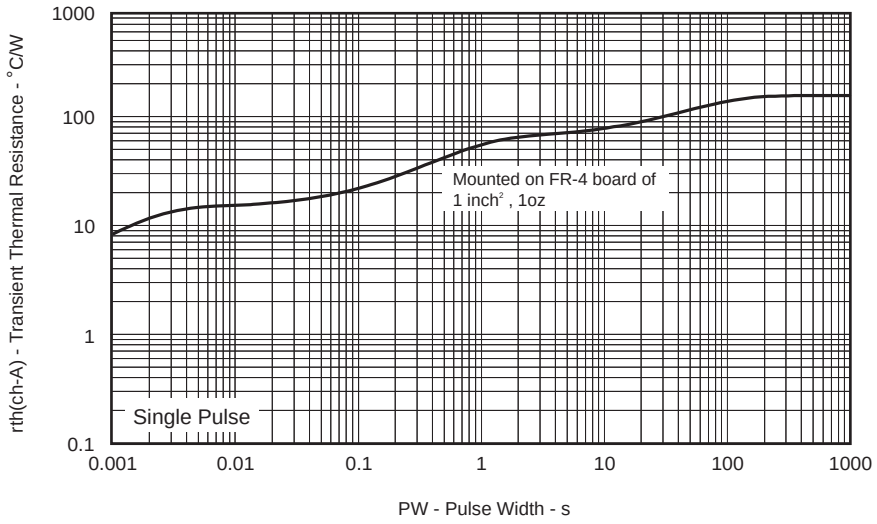
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



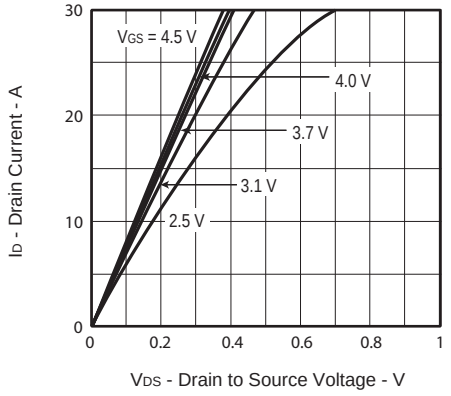
FORWARD BIAS SAFE OPERATING AREA



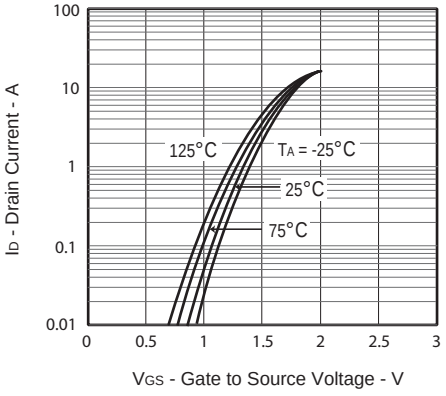
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



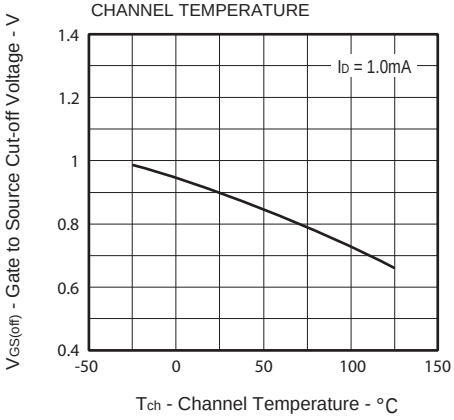
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



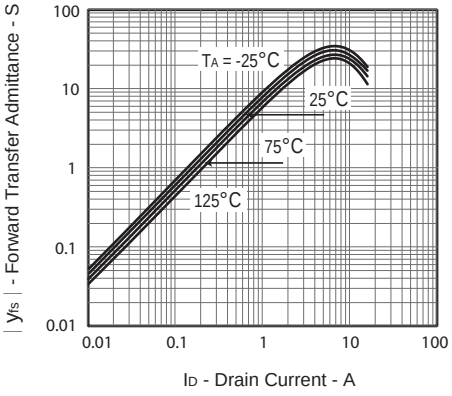
FORWARD TRANSFER CHARACTERISTICS



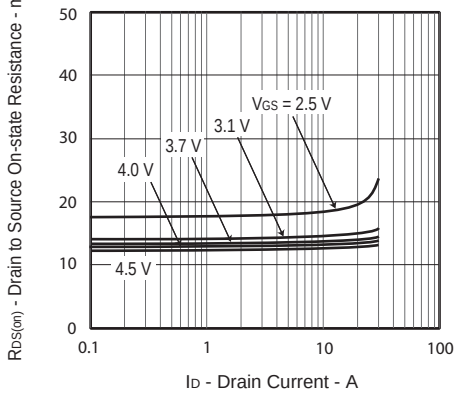
GATE TO SOURCE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



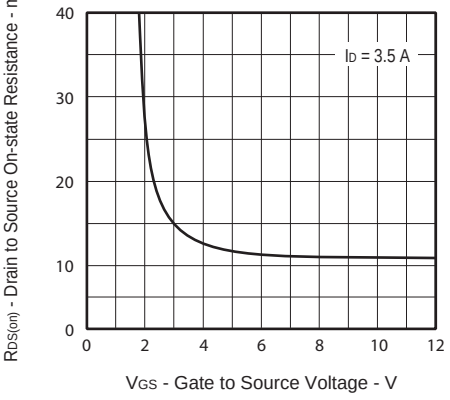
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



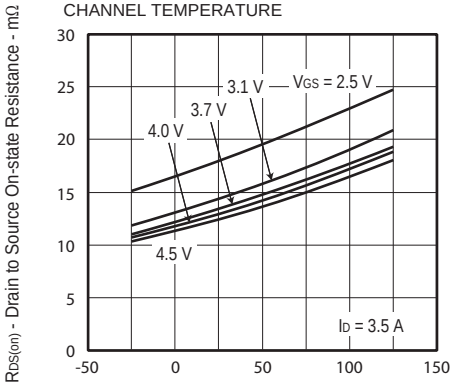
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT



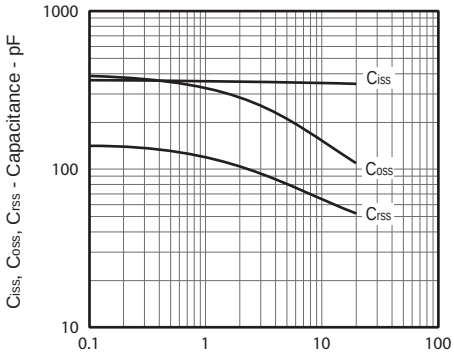
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



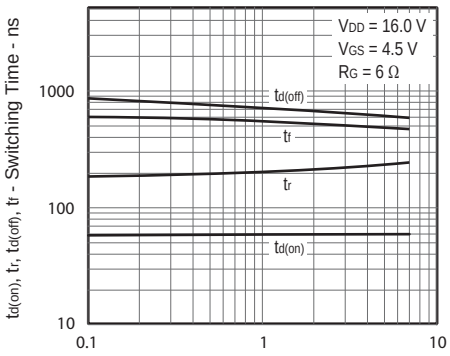
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



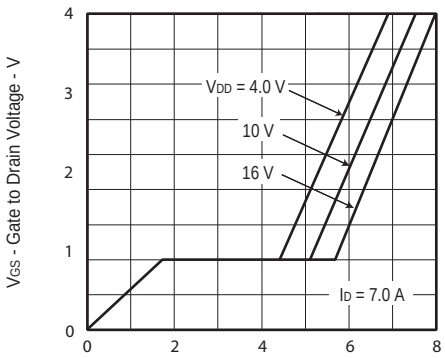
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



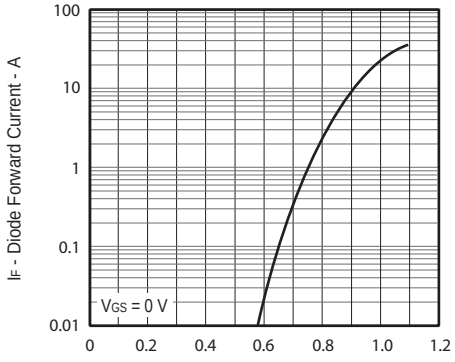
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS

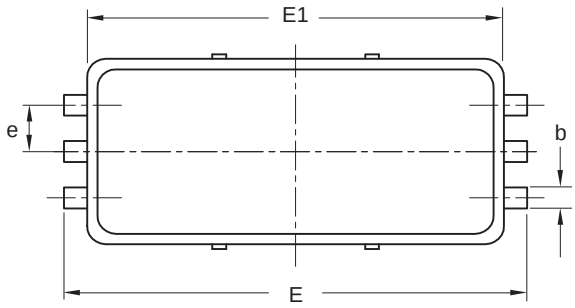


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

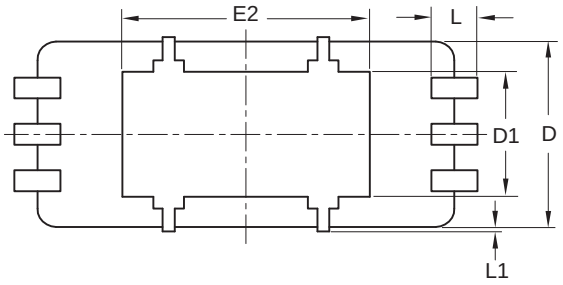


PACKAGE OUTLINE DIMENSIONS

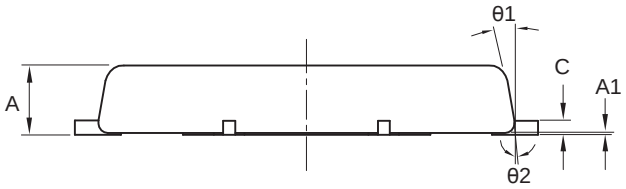
DFN 2x5-6L



TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOLS	MILLIMETERS		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	—	0.05
b	0.20	0.225	0.30
C	0.10	0.152	0.20
D		2.00 BSC	
D1	1.30	1.35	1.55
E		5.00 BSC	
E1		4.50 BSC	
E2	2.60	2.67	2.95
e		0.50 BSC	
L	0.40	0.50	0.60
L1	0.00	—	0.10
θ1	0°	10°	12°
θ2		3° BSC	

TOP MARKING DEFINITION

DFN 2x5-6L