SamHop Microelectronics Corp.

STA6610

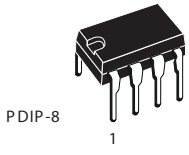
Nov.24 2006

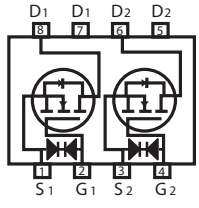
Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
30V	7.6A	23 @ V_{GS} = 10V 35 @ V_{GS} = 4.5V

FEATURES

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





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

Parameter		Symbol	N-Channel	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous [a] @ Ta	25°C	I_D	7.6	A
	70°C		6	A
-Pulsed [b]		I_{DM}	30	A
Drain-Source Diode Forward Current [a]		I_S	1.7	A
Maximum Power Dissipation [a]	Ta= 25°C	P_D	3	W
	Ta=70°C		2	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient [a]	$R_{\theta JA}$	41.5	°C/W

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

Parameter	Symbol	Condition	Min	Typ [c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±10	uA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.8	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=7A		17	23	m ohm
		V_{GS}=4.5V, I_D=5A		23	35	m ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS}=15V, V_{GS}=10V	20			A
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=7A		15		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0V f=1.0MHz		620		pF
Output Capacitance	C_{OSS}			190		pF
Reverse Transfer Capacitance	C_{RSS}			115		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}=15V, I_D=7A, RL=2.1 ohm, V_{GS}=10V, R_{GEN}=6 ohm		13		ns
Rise Time	t_r			14.4		ns
Turn-Off Delay Time	$t_{D(OFF)}$			40		ns
Fall Time	t_f			8.4		ns
Total Gate Charge	Q_g	V_{DS}=15V, I_D=7A, V_{GS}=10V		13		nC
		V_{DS}=15V, I_D=7A, V_{GS}=4.5V		6.8		nC
Gate-Source Charge	Q_{gs}	V_{DS}=15V, I_D=7A, V_{GS}=10V		1.5		nC
Gate-Drain Charge	Q_{gd}			3.5		nC

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

Parameter	Symbol	Condition	Min	Typ [c]	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [b]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, Is =1.7A		0.8	1.2	V

Notes

a.Surface Mounted on FR4 Board, t ≤10sec.
b.Pulse Test:Pulse Width≤300 μs, Duty Cycle ≤2%.
c.Guaranteed by design, not subject to production testing.

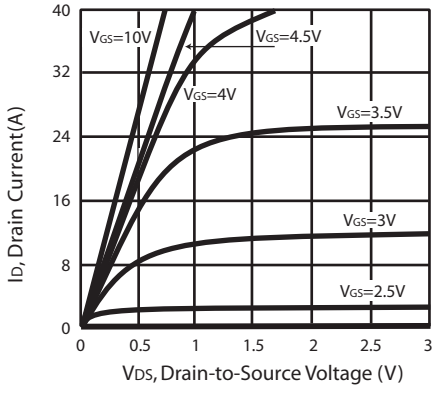


Figure 1. Output Characteristics

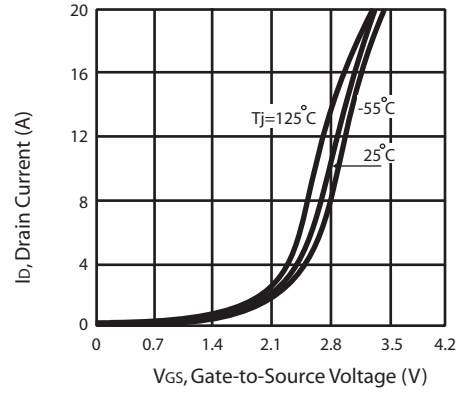


Figure 2. Transfer Characteristics

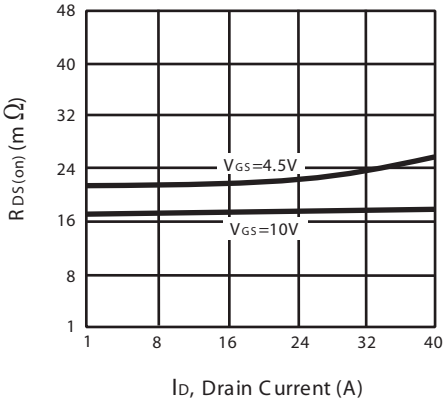


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

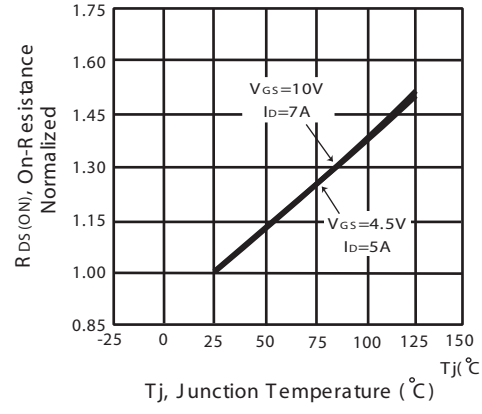


Figure 4. On-Resistance Variation with Drain Current and Temperature

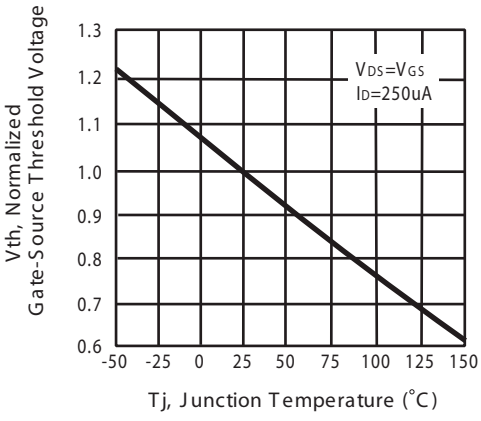


Figure 5. Gate Threshold Variation with Temperature

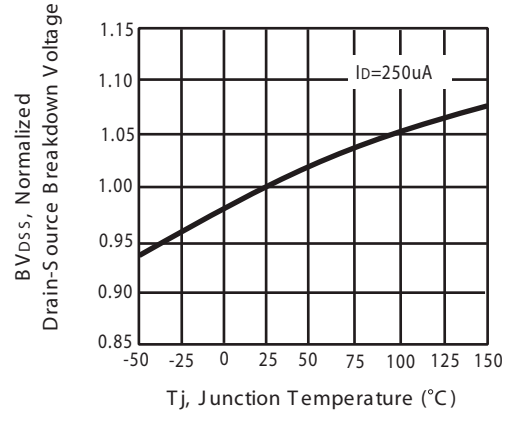


Figure 6. Breakdown Voltage Variation with Temperature

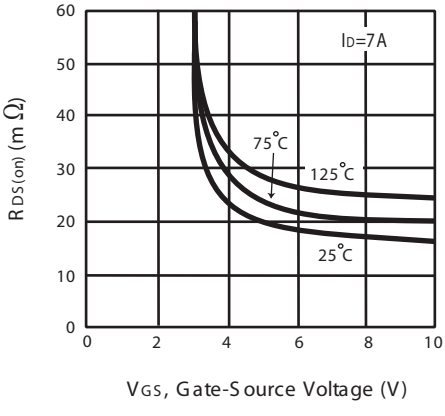


Figure 7. On-Resistance vs. Gate-Source Voltage

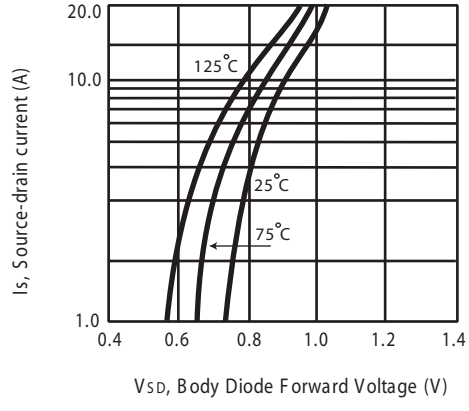


Figure 8. Body Diode Forward Voltage Variation with Source Current

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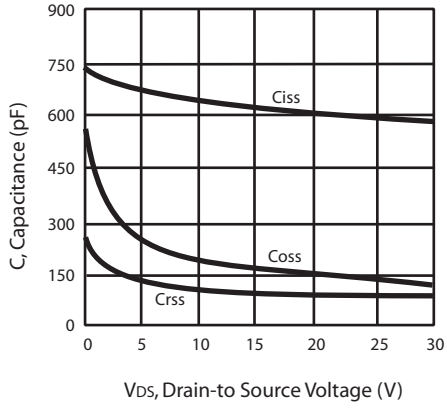


Figure 8. Capacitance

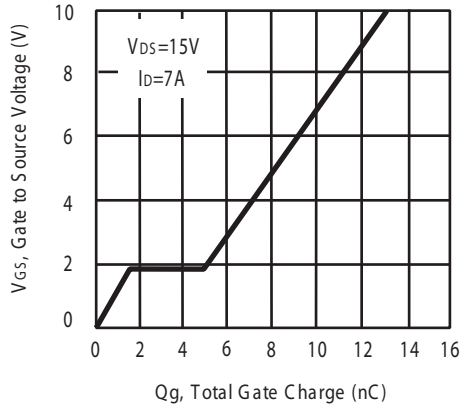


Figure 9. Gate Charge

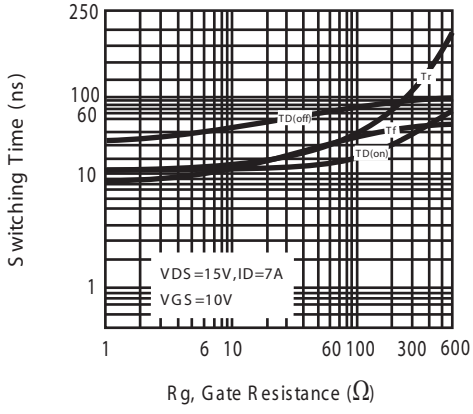


Figure 11.switching characteristics

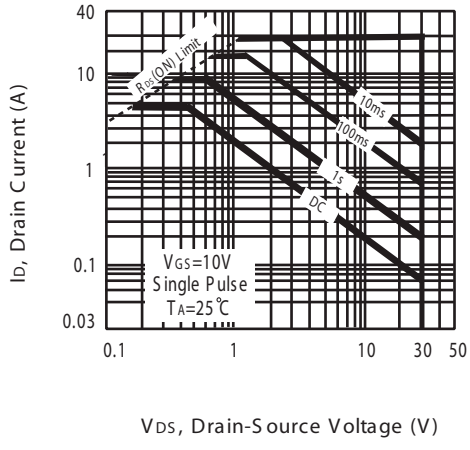
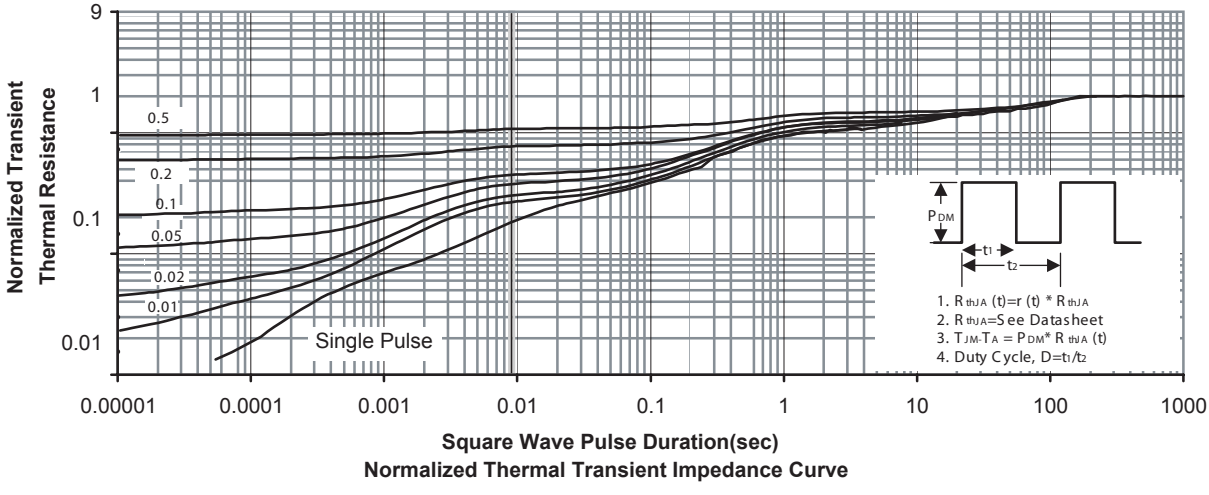


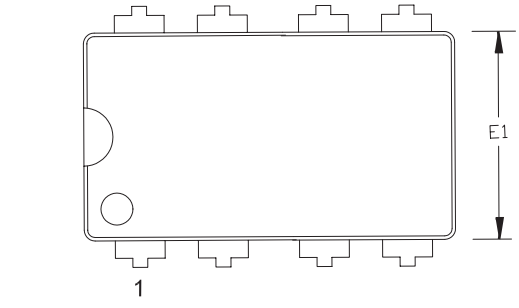
Figure 10. Maximum Safe Operating Area



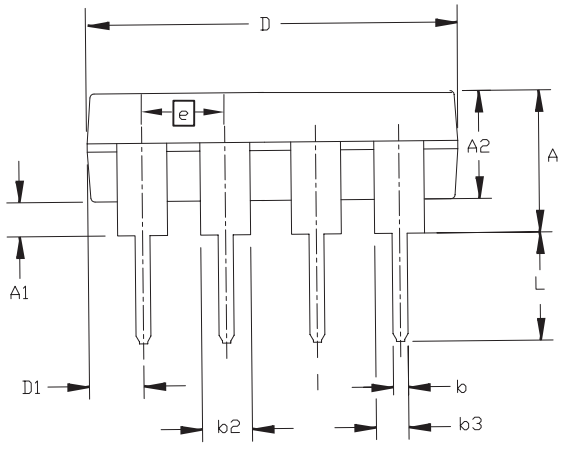
Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

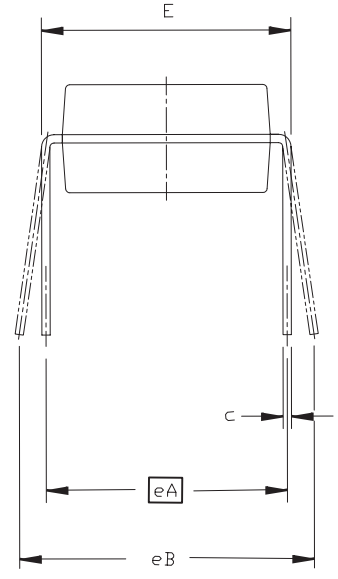
PDIP 8



TOP VIEW



FRONT VIEW



SIDE VIEW

SYMBOL	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.145	.172	.200	3.68	4.37	5.08
A1	.020	-	-	0.51	-	-
A2	.125	.130	.135	3.18	3.30	3.43
b	.015	.018	.021	0.38	0.46	0.53
c	.009	.012	.014	0.23	0.30	0.36
b2	.045	.060	.070	1.14	1.52	1.78
b3	.030	.039	.045	0.76	0.99	1.14
L	.125	.132	.140	3.18	3.35	3.56
e	.090	.100	.110	2.29	2.54	2.79
D	.373	.386	.400	9.47	9.80	10.16
D1	.030	.045	.060	0.76	1.14	1.52
E	.300	.310	.320	7.62	7.87	8.13
E1	.245	.250	.255	6.22	6.35	6.48
eA	.280	-	-	7.11	-	-
eB	.310	.325	.365	7.87	8.26	9.27