SamHop Microelectronics Corp.

SDM9433

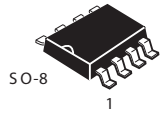
March , 2003

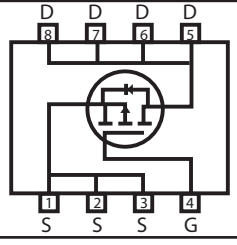
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) MAX
-20V	-5.4A	45 @ V_{GS} = -4.5V
		70 @ V_{GS} = -2.7V

FEATURES

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





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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	−20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous [a] @ T_J=125°C	I_D	±5.4	A
-Pulsed [b]	I_{DM}	±20	A
Drain-Source Diode Forward Current [a]	I_S	2.6	A
Maximum Power Dissipation [a]	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient [a]	$R_{\theta JA}$	50	°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	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V			-1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.7			V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-5.1A			45	m-ohm
		V_{GS}=-2.7V, I_D=-2.0A			70	m-ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS}=-5V, V_{GS}=-4.5V	-20			A
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-5.3A		13		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS}=-10V, V_{GS}=0V f=1.0MHz		1190		pF
Output Capacitance	C_{OSS}			710		pF
Reverse Transfer Capacitance	C_{RSS}			260		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_D=-10V, I_D=-1A, V_{GEN}=-4.5V, R_{GEN}=6 -ohm		20	40	ns
Rise Time	t_r			18	70	ns
Turn-Off Delay Time	$t_{D(OFF)}$			50	120	ns
Fall Time	t_f			29	140	ns
Total Gate Charge	Q_g	V_{DS}=-10V, I_D=-1A, V_{GS}=-4.5V		20	25	nC
Gate-Source Charge	Q_{gs}			4		nC
Gate-Drain Charge	Q_{gd}			4.3		nC

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 =-5.3A		-0.89	-1.2	V

Notes

a.Surface Mounted on FR4 Board, t <=10sec.

b.Pulse Test:Pulse Width<=300us, Duty Cycle<= 2%.

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

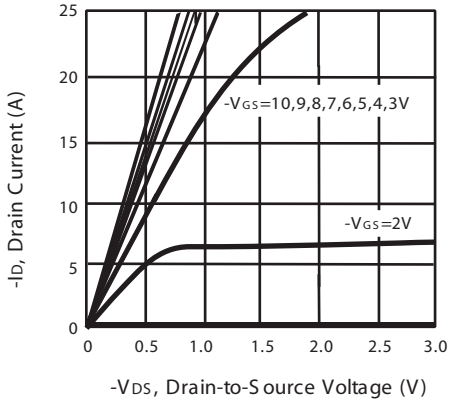

Figure 1. Output Characteristics

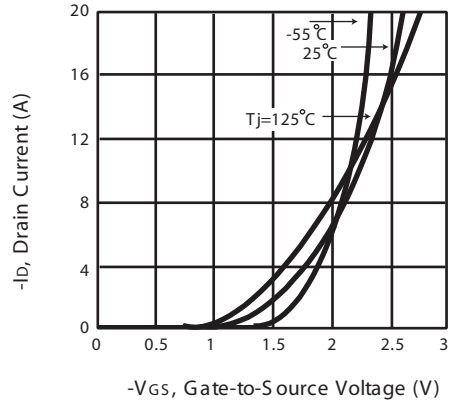

Figure 2. Transfer Characteristics

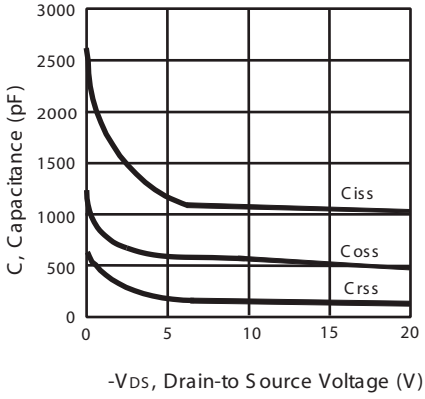

Figure 3. Capacitance

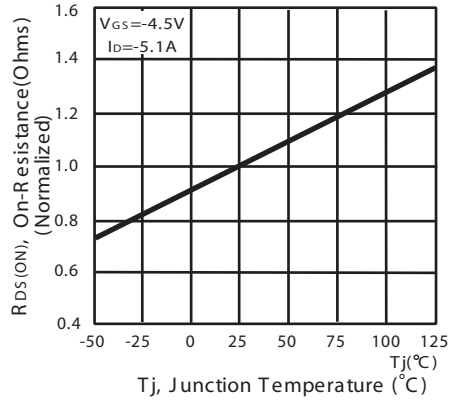

Figure 4. On-Resistance Variation with Temperature

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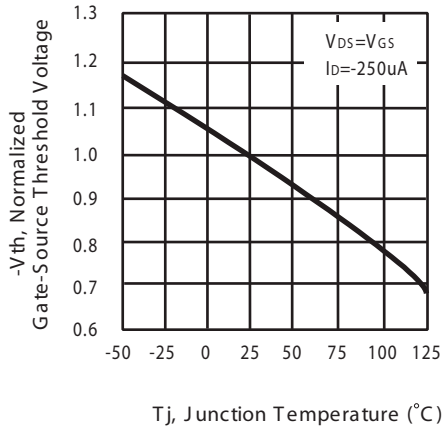

Figure 5. Gate Threshold Variation with Temperature

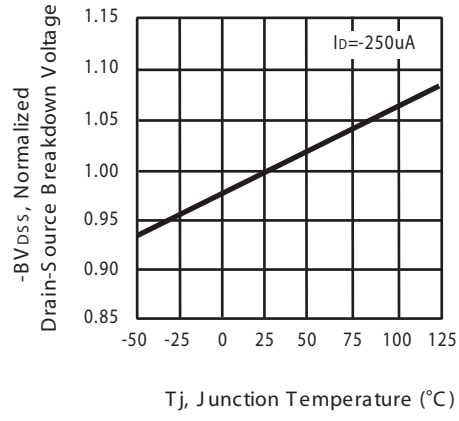

Figure 6. Breakdown Voltage Variation with Temperature

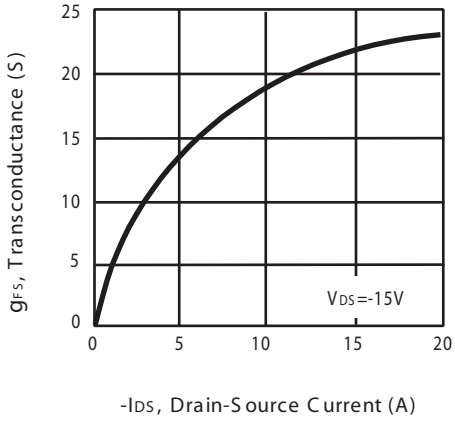

Figure 7. Transconductance Variation with Drain Current

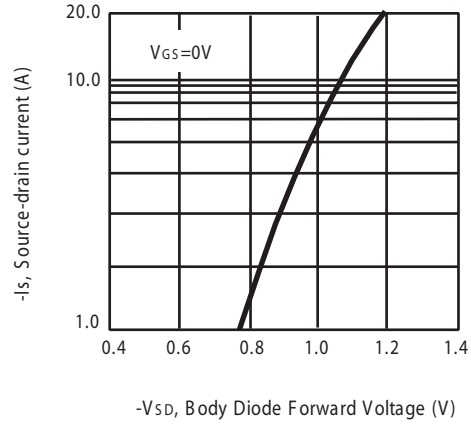

Figure 8. Body Diode Forward Voltage Variation with Source Current

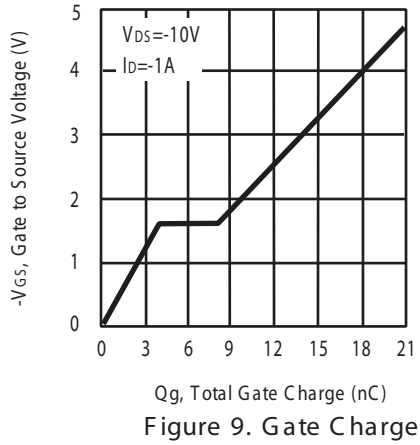

Figure 9. Gate Charge

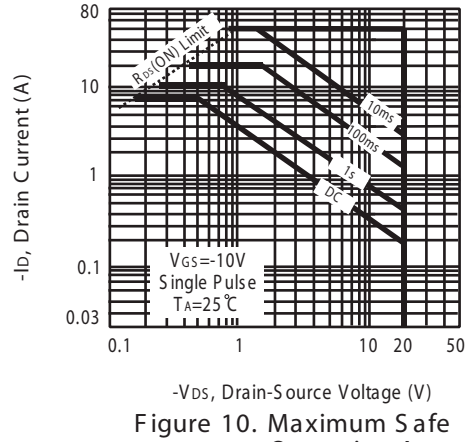

Figure 10. Maximum Safe Operating Area

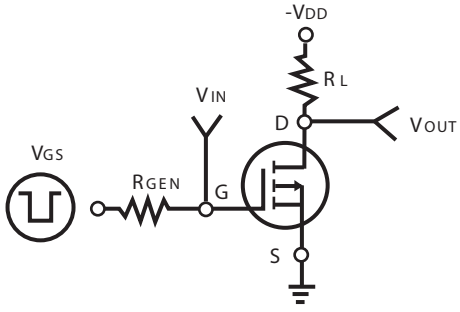

Figure 11. Switching Test Circuit

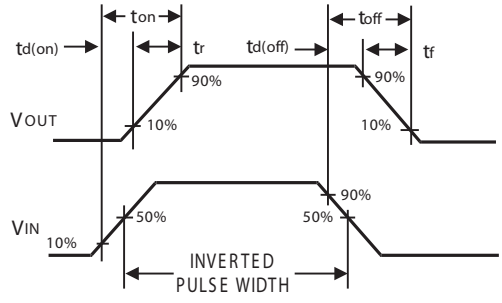

Figure 12. Switching Waveforms

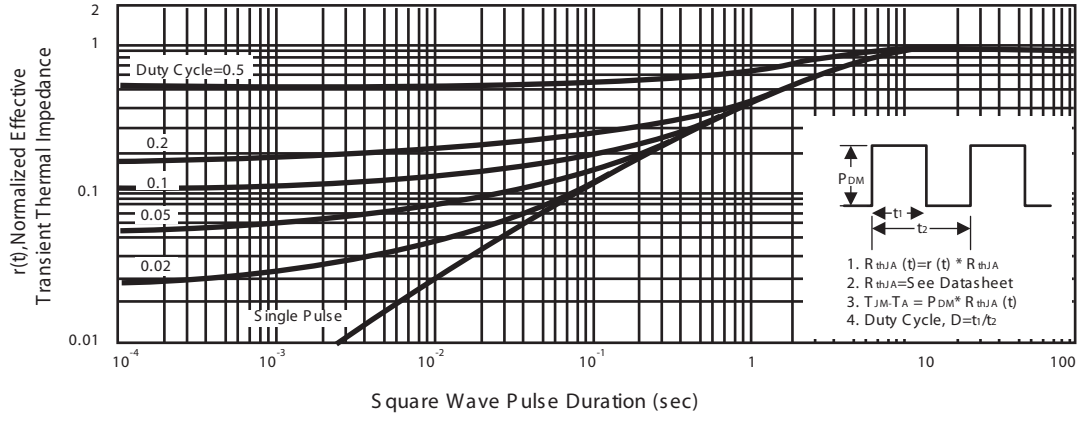

Figure 13. Normalized Thermal Transient Impedance Curve