



STU408D

SamHop Microelectronics Corp.

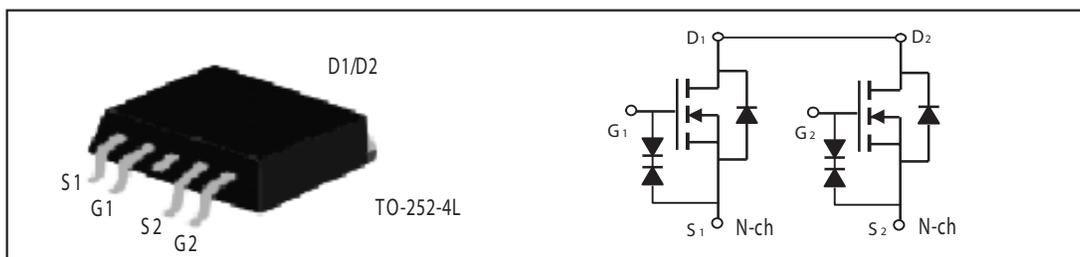
July.25 2006

Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
40V	16A	30 @ V _{GS} = 10V
		40 @ V _{GS} = 4.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- TO252-4L package.
- ESD Protected.



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

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	40	V	
Gate-Source Voltage	V _{GS}	±20	V	
Drain Current-Continuous @ T _a	I _D	25°C	16	A
		70°C	13.8	A
-Pulsed ^a	I _{DM}	50	A	
Drain-Source Diode Forward Current	I _S	8	A	
Maximum Power Dissipation	P _D	T _a =25°C	11	W
		T _a =70°C	7.7	
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 175	°C	

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	R _{θJC}	13.6	°C/W
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ELECTRICAL CHARACTERISTICS (TA =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	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, 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	1.8	3.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =8A		22	30	m-ohm
		V _{GS} = 4.5V, I _D =6A		30	40	m-ohm
On-State Drain Current	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 4.5V	10			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D =8A		15		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} =20V, V _{GS} = 0V f=1.0MHz		735		pF
Output Capacitance	C _{OSS}			120		pF
Reverse Transfer Capacitance	C _{RSS}			70		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 20V, I _D = 3A, V _{GS} = 10V, R _{GEN} = 3 ohm		13		ns
Rise Time	t _r			15		ns
Turn-Off Delay Time	t _{D(OFF)}			26		ns
Fall Time	t _f			10		ns
Total Gate Charge (10V)	Q _g	V _{DS} =20V, I _D = 8A, V _{GS} =10V		15		nC
Total Gate Charge (4.5V)	Q _g			7.2		nC
Gate-Source Charge	Q _{gs}			2.0		nC
Gate-Drain Charge	Q _{gd}			3.8		nC

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ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS ^a						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 8A$		0.94	1.3	V

Notes

- a. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

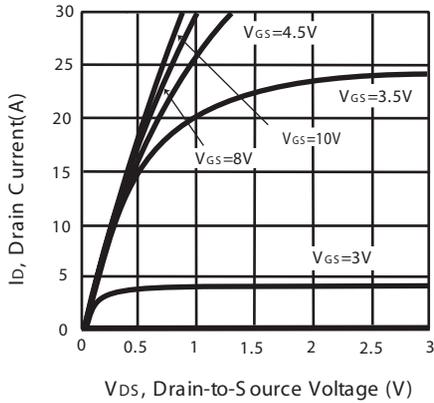


Figure 1. Output Characteristics

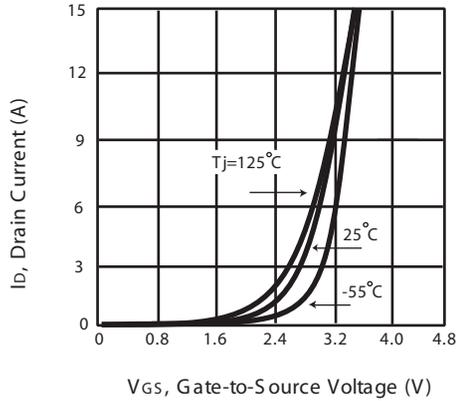


Figure 2. Transfer Characteristics

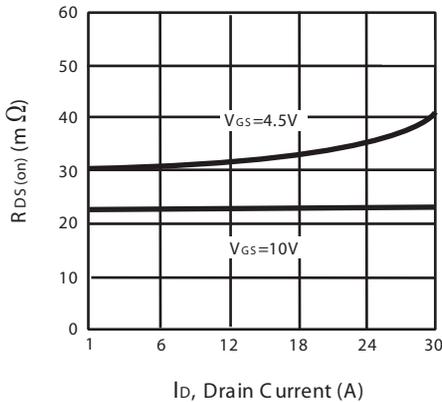


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

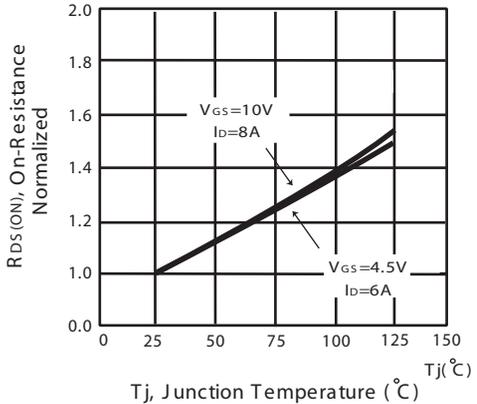


Figure 4. On-Resistance Variation with Drain Current and Temperature

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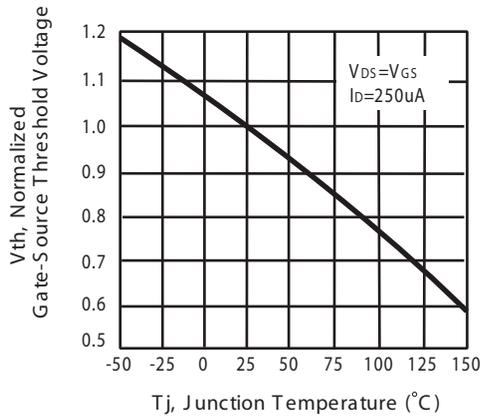


Figure 5. Gate Threshold Variation with Temperature

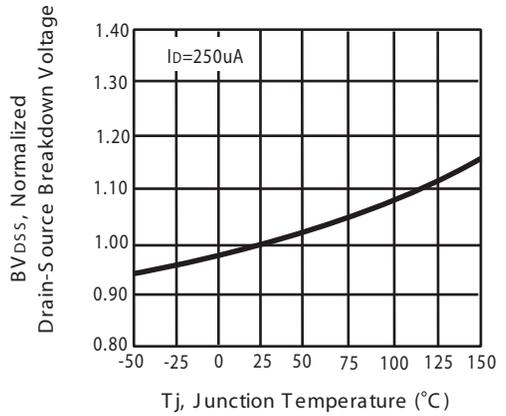


Figure 6. Breakdown Voltage Variation with Temperature

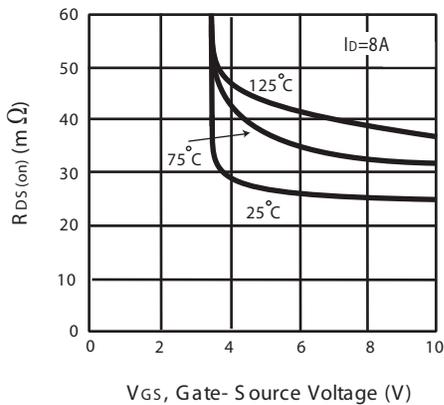


Figure 7. On-Resistance vs. Gate-Source Voltage

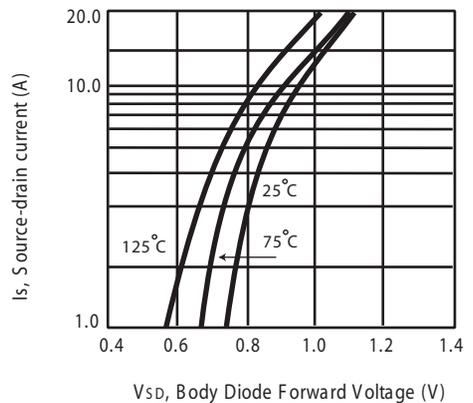


Figure 8. Body Diode Forward Voltage Variation with Source Current

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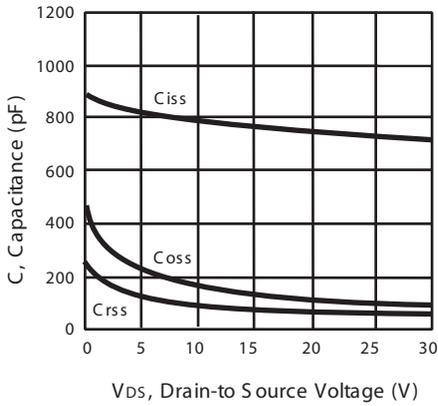


Figure 9. Capacitance

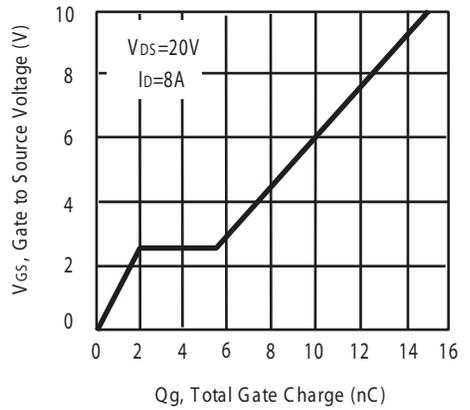


Figure 10. Gate Charge

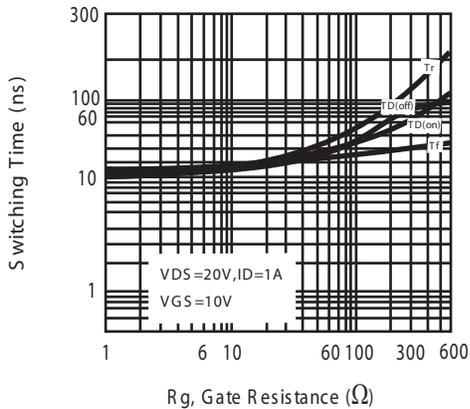


Figure 11. switching characteristics

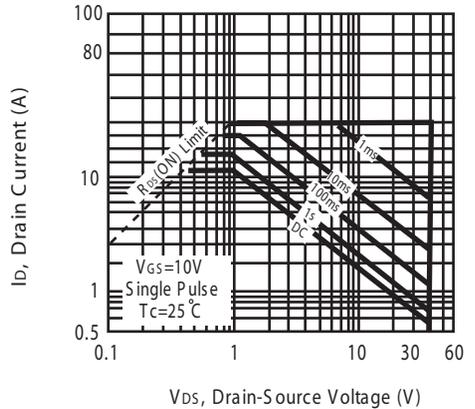


Figure 12. Maximum Safe Operating Area

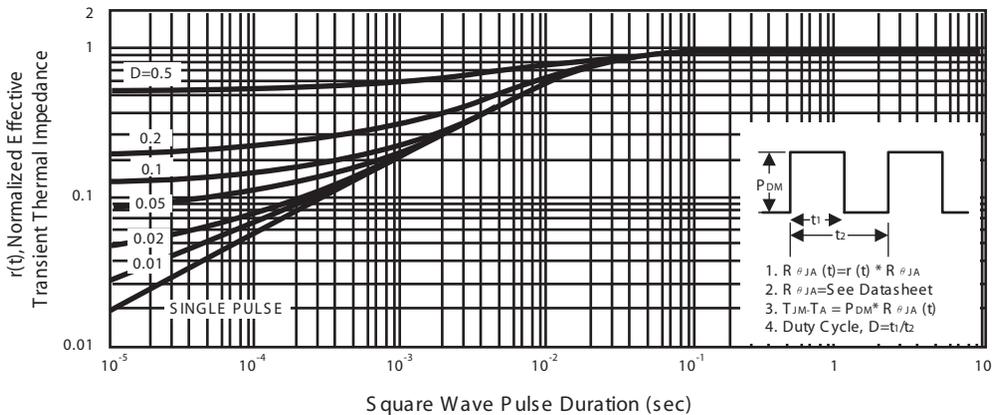


Figure 13. Normalized Thermal Transient Impedance Curve

