

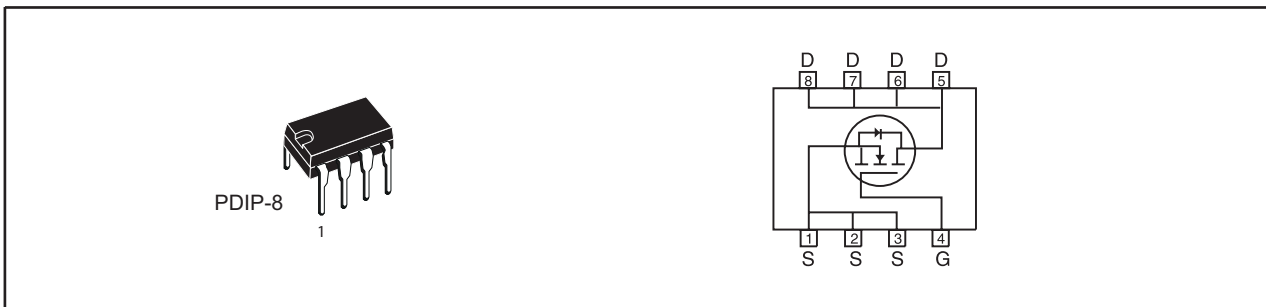


N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
40V	11A	12 @ V _{GS} =10V
		16 @ V _{GS} =4.5V

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)

Symbol	Parameter	Limit	Units
V _{DS}	Drain-Source Voltage	40	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous ^a	T _A =25°C	11
		T _A =70°C	8.9
I _{DM}	-Pulsed ^b	55	A
P _D	Maximum Power Dissipation ^a	T _A =25°C	2.5
		T _A =70°C	1.6
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C

THERMAL CHARACTERISTICS

R _{θJA}	Thermal Resistance, Junction-to-Ambient ^a	50	°C/W
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STA4470

Ver 1.0

ELECTRICAL CHARACTERISTICS (TA=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	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS ^b						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	2.0	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =11A		10	12	m ohm
		V _{GS} =4.5V , I _D =9.6A		12	16	m ohm
g _{FS}	Forward Transconductance	V _{DS} =5V , I _D =11A		26.5		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =20V, V _{GS} =0V f=1.0MHz		1720		pF
C _{OSS}	Output Capacitance			230		pF
C _{RSS}	Reverse Transfer Capacitance			145		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =20V I _D =1A		22		ns
t _r	Rise Time			23		ns
t _{D(OFF)}	Turn-Off Delay Time	V _{GS} =10V		65		ns
t _f	Fall Time	R _{GEN} =3.3 ohm		30		ns
Q _g	Total Gate Charge	V _{DS} =20V, I _D =11A, V _{GS} =10V		25		nC
		V _{DS} =20V, I _D =11A, V _{GS} =4.5V		12		nC
Q _{gs}	Gate-Source Charge	V _{DS} =20V, I _D =11A, V _{GS} =10V		2.5		nC
Q _{gd}	Gate-Drain Charge			5.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I _S	Maximum Continuous Drain-Source Diode Forward Current				1.7	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1.7A		0.74	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.						

Aug, 18, 2008

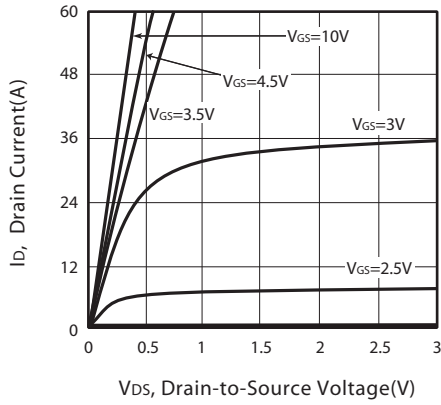


Figure 1. Output Characteristics

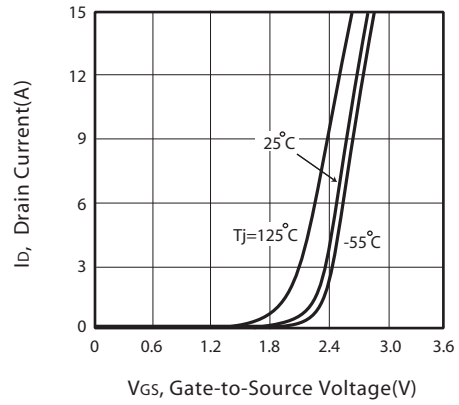


Figure 2. Transfer Characteristics

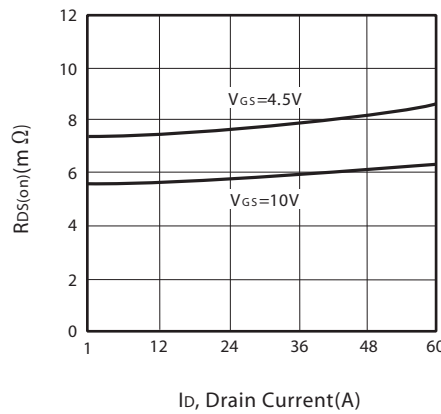


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

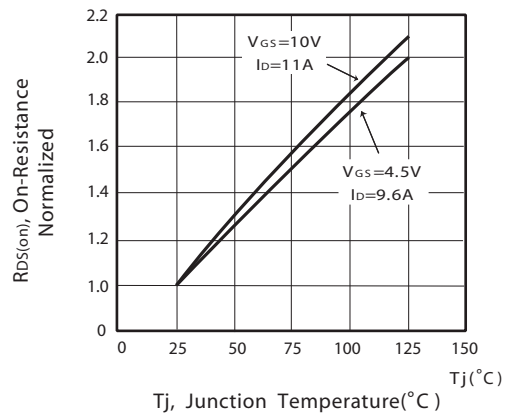


Figure 4. On-Resistance Variation with Drain Current and Temperature

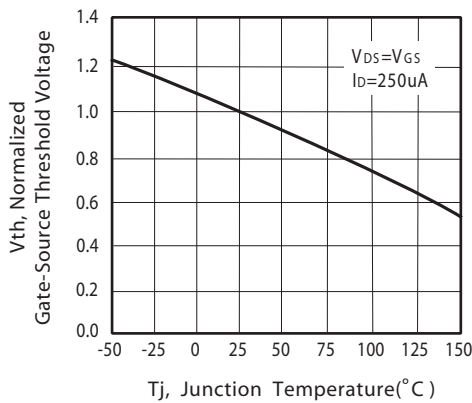


Figure 5. Gate Threshold Variation with Temperature

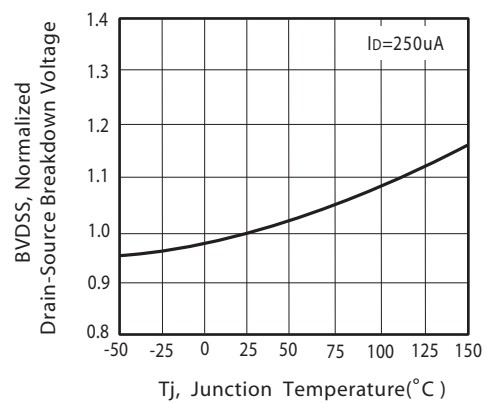


Figure 6. Breakdown Voltage Variation with Temperature

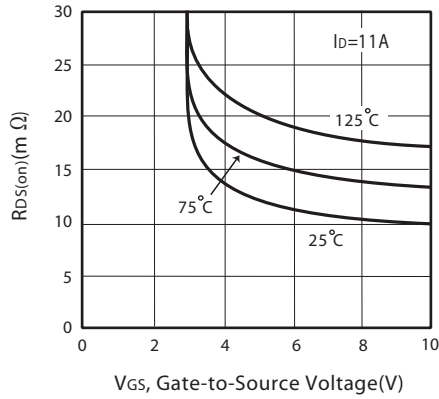


Figure 7. On-Resistance vs. Gate-Source Voltage

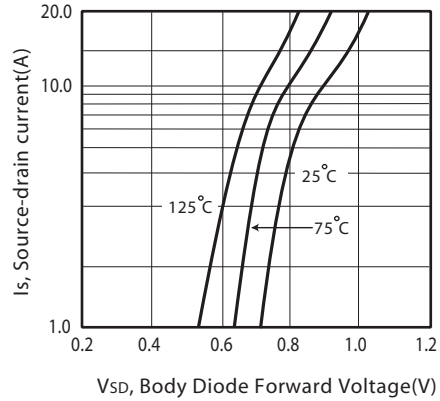


Figure 8. Body Diode Forward Voltage Variation with Source Current

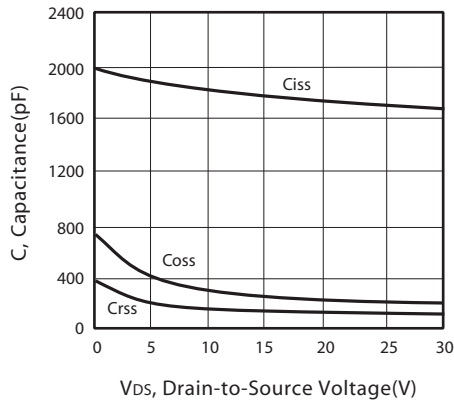


Figure 9. Capacitance

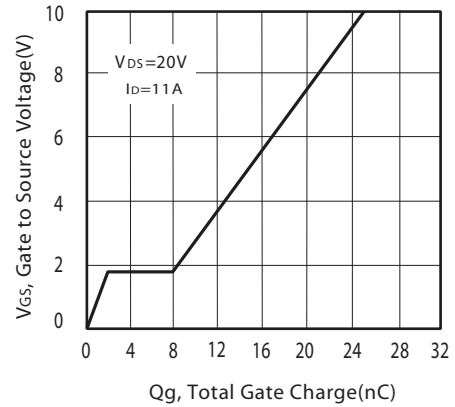


Figure 10. Gate Charge

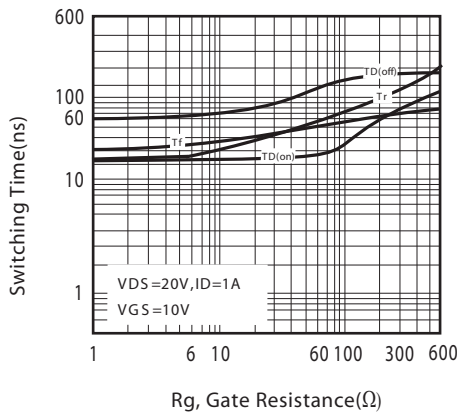


Figure 11. switching characteristics

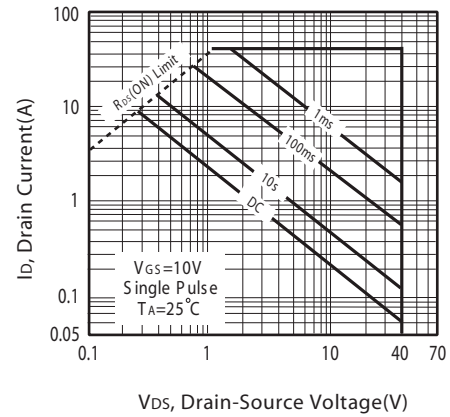


Figure 12. Maximum Safe Operating Area

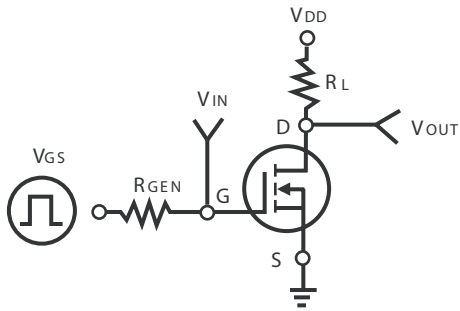


Figure 13. Switching Test Circuit

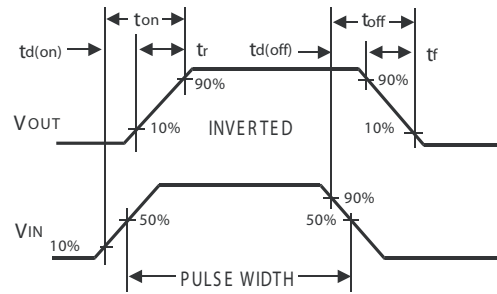


Figure 14. Switching Waveforms

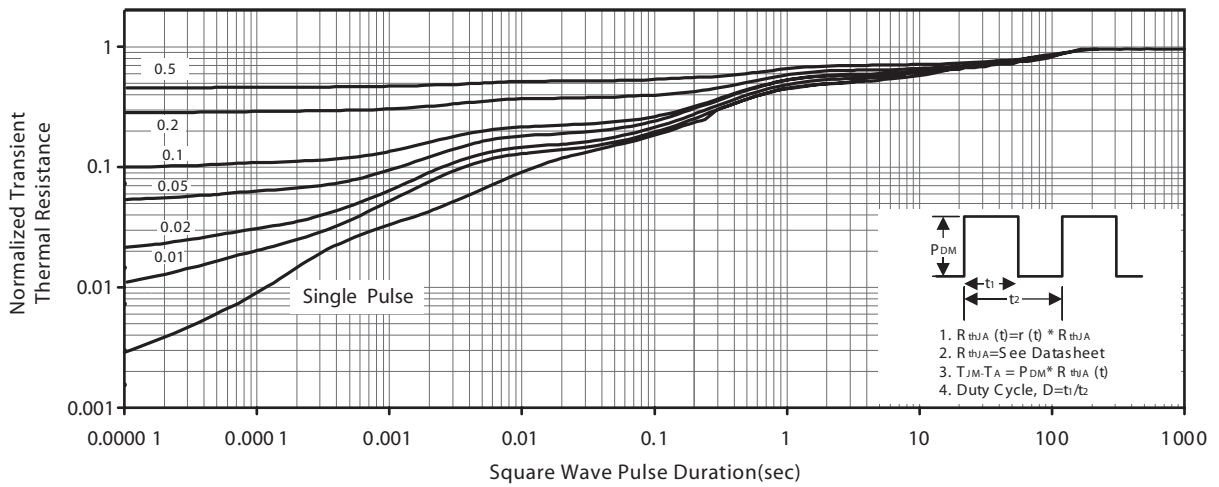


Figure 15. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

