



P-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
-30V	-2.2A	169 @ V _{GS} =-10V
		293 @ 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	-30	V	
V _{GS}	Gate-Source Voltage	±20	V	
I _D	Drain Current-Continuous ^a	T _A =25°C	-2.2	A
		T _A =70°C	-1.8	A
I _{DM}	-Pulsed ^b	-8	A	
P _D	Maximum Power Dissipation ^a	T _A =25°C	1.25	W
		T _A =70°C	0.8	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C	

THERMAL CHARACTERISTICS

R _{θJA}	Thermal Resistance, Junction-to-Ambient ^a	100	°C/W
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STS3409

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	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V , V _{GS} =0V			-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-1.8	-3.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V , I _D =-1.1A		135	169	m ohm
		V _{GS} =-4.5V , I _D =-0.8A		217	293	m ohm
g _{FS}	Forward Transconductance	V _{DS} =-5V , I _D =-1.1A		2.6		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V f=1.0MHz		150		pF
C _{OSS}	Output Capacitance			51		pF
C _{RSS}	Reverse Transfer Capacitance			29		pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =-15V I _D =-1A V _{GS} =-10V R _{GEN} = 6 ohm		4.6		ns
t _r	Rise Time			11.5		ns
t _{D(OFF)}	Turn-Off Delay Time			16.5		ns
t _f	Fall Time			12		ns
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-1.1A, V _{GS} =-10V		3.1		nC
		V _{DS} =-15V, I _D =-1.1A, V _{GS} =-4.5V		1.6		nC
Q _{gs}	Gate-Source Charge	V _{DS} =-15V, I _D =-1.1A, V _{GS} =-10V		0.3		nC
Q _{gd}	Gate-Drain Charge			0.88		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A		-0.79	-1.2	V

Notes

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

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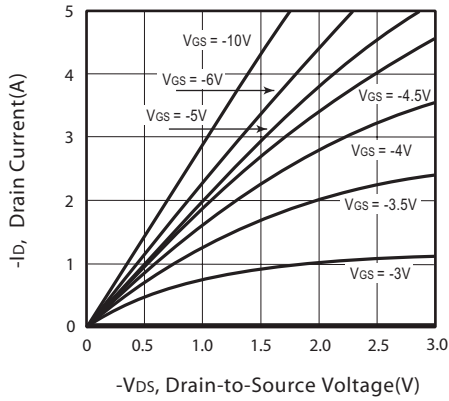


Figure 1. Output Characteristics

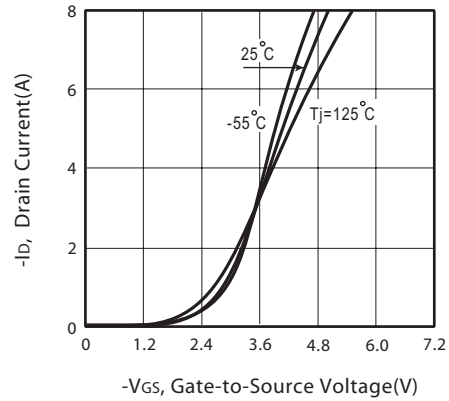


Figure 2. Transfer Characteristics

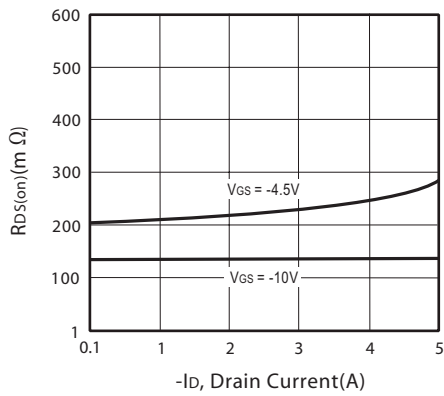


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

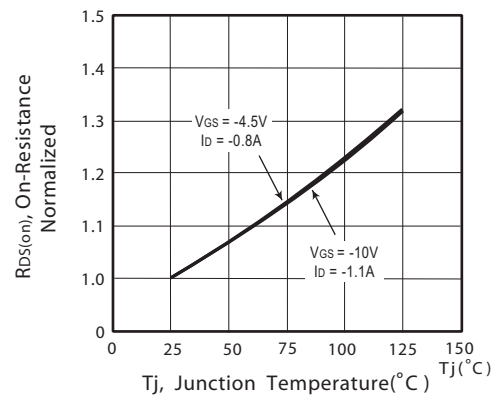


Figure 4. On-Resistance Variation with Drain Current and Temperature

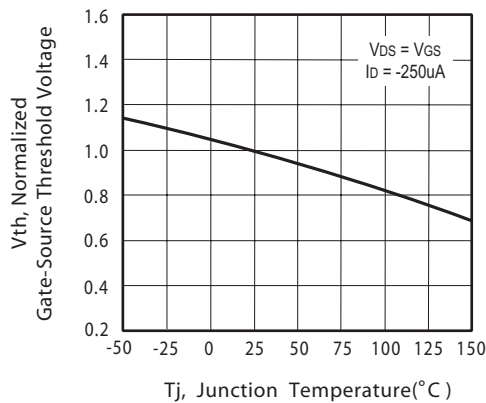


Figure 5. Gate Threshold Variation with Temperature

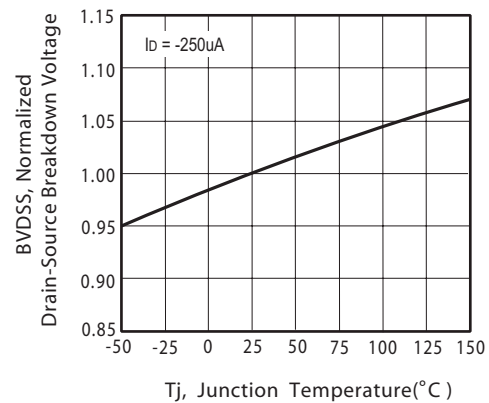


Figure 6. Breakdown Voltage Variation with Temperature

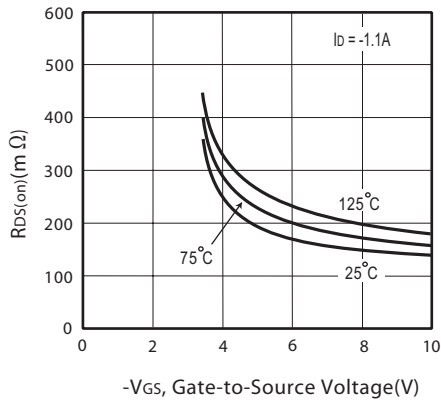


Figure 7. On-Resistance vs. Gate-Source Voltage

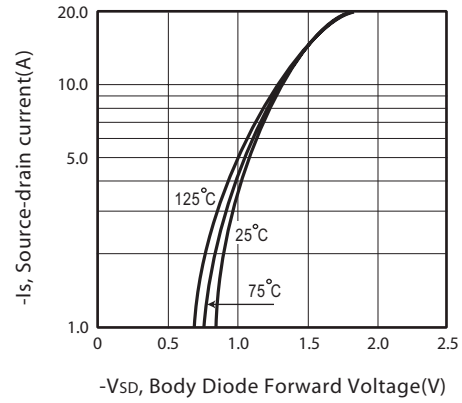


Figure 8. Body Diode Forward Voltage Variation with Source Current

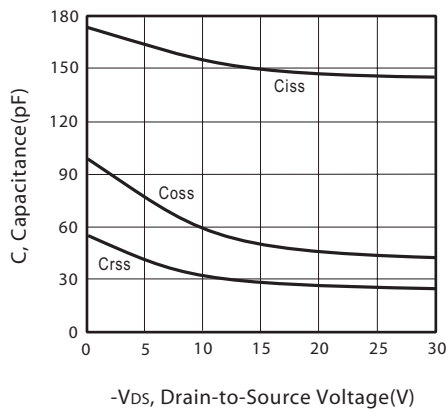


Figure 9. Capacitance

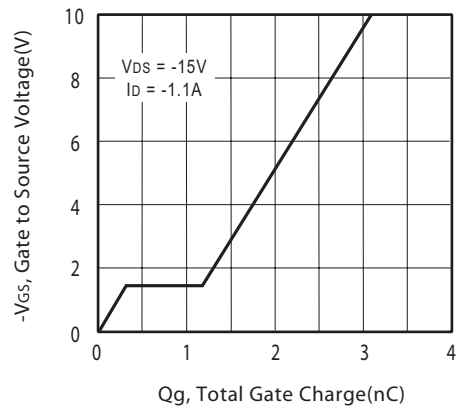


Figure 10. Gate Charge

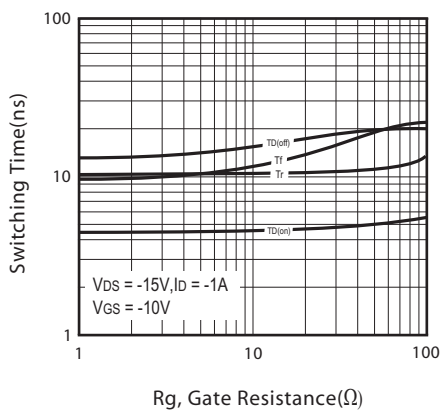


Figure 11. switching characteristics

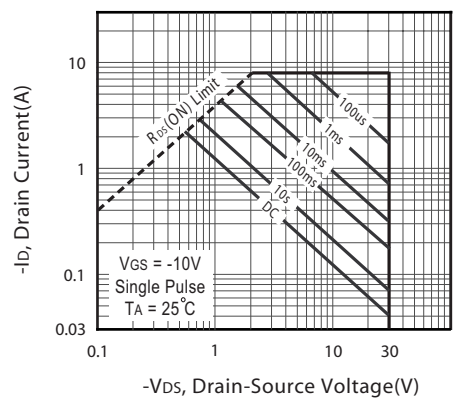


Figure 12. Maximum Safe Operating Area

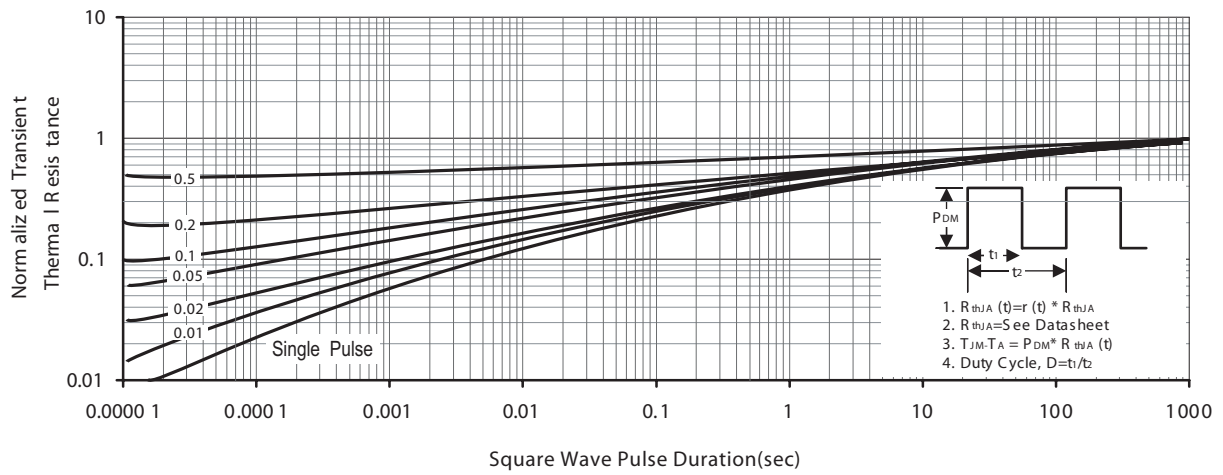


Figure 13. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

