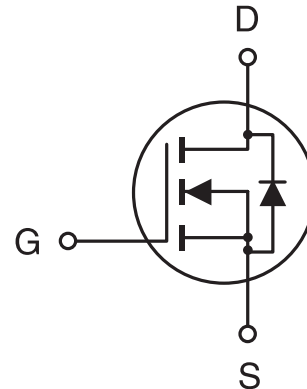


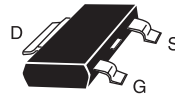
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- 30V , 7.2A , $R_{DS(ON)}=35m\Omega$ @ $V_{GS}=10V$.
 $R_{DS(ON)}=50m\Omega$ @ $V_{GS}=4.5V$.
- High dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- SOT-223 Package.



SOT-223



SOT-223 (J23Z)

8

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ^a @ $T_J=125^{\circ}C$ -Pulsed ^b	I_D	± 7.2	A
	I_{DM}	± 25	A
Drain-Source Diode Forward Current ^a	I_S	2.3	A
Maximum Power Dissipation ^a	PD	3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-65 to 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	$R_{\theta JA}$	42	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250mA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0V			1	mA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250mA	1	1.6	3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 7.2A		27	35	mΩ
		V _{GS} = 4.5V, I _D = 6.0A		43	50	mΩ
On-State Drain Current	I _{D(ON)}	V _{DS} = 5V, V _{GS} = 10V	25			A
Forward Transconductance	g _{FS}	V _{DS} = 10V, I _D = 7.2A	4	11		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} = 0V f = 1.0MHz		500	650	pF
Output Capacitance	C _{OSS}			267	350	pF
Reverse Transfer Capacitance	C _{RSS}			93	120	pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 10V, I _D = 1A, V _{GEN} = 10V, R _{GEN} = 6Ω		12	20	ns
Rise Time	t _r			13	30	ns
Turn-Off Delay Time	t _{D(OFF)}			29	50	ns
Fall Time	t _f			10	20	ns
Total Gate Charge	Q _g	V _{DS} = 10V, I _D = 7.2A, V _{GS} = 10V		16	17	nC
Gate-Source Charge	Q _{gs}			2		nC
Gate-Drain Charge	Q _{gd}			3		nC

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 7.2A$		0.8	1.3	V

Notes

- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.
- b. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.
- c. Guaranteed by design, not subject to production testing.

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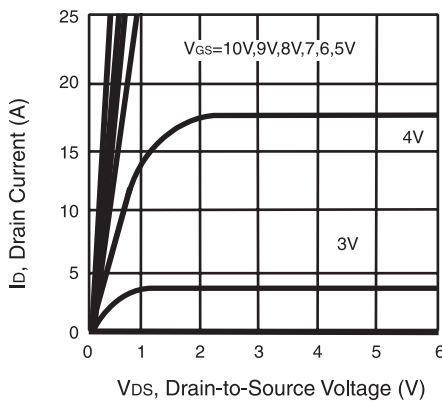


Figure 1. Output Characteristics

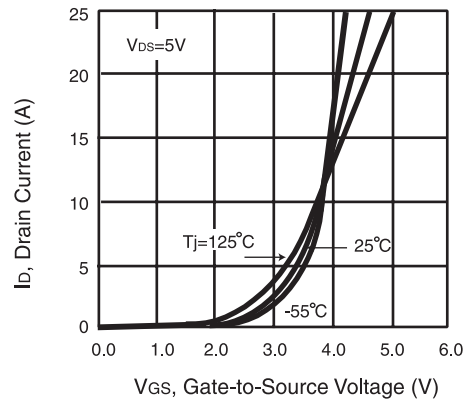


Figure 2. Transfer Characteristics

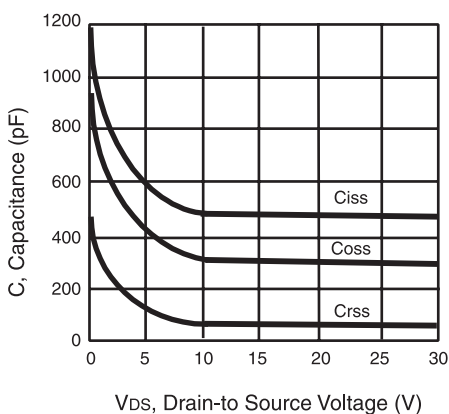


Figure 3. Capacitance

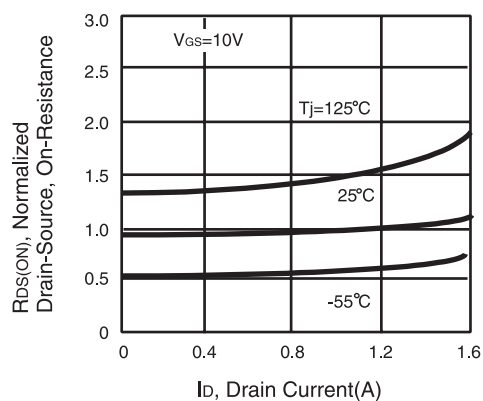


Figure 4. On-Resistance Variation with Drain Current and Temperature

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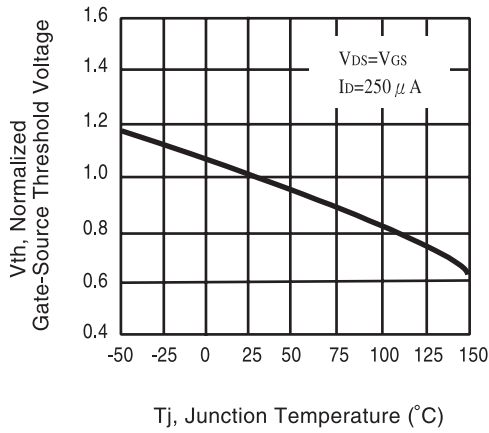


Figure 5. Gate Threshold Variation with Temperature

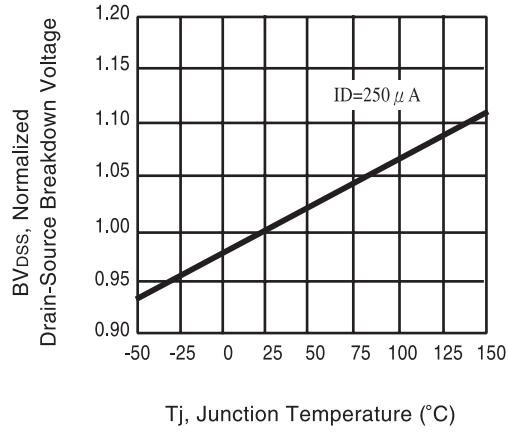


Figure 6. Breakdown Voltage Variation with Temperature

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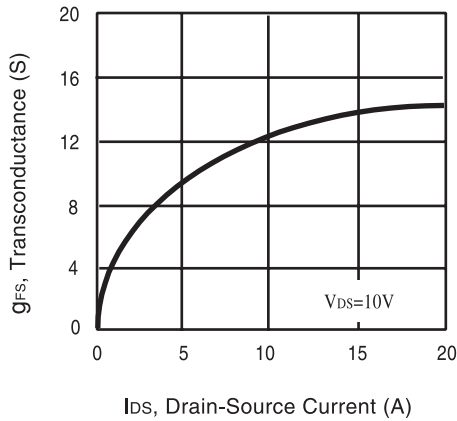


Figure 7. Transconductance Variation with Drain Current

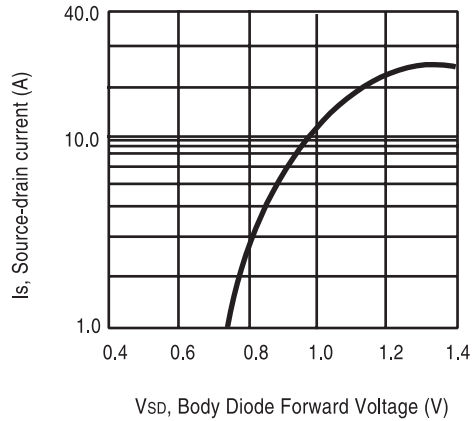


Figure 8. Body Diode Forward Voltage Variation with Source Current

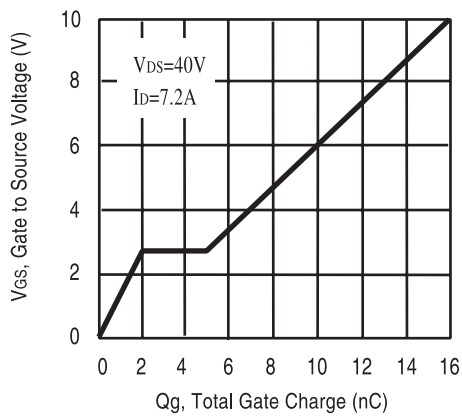


Figure 9. Gate Charge

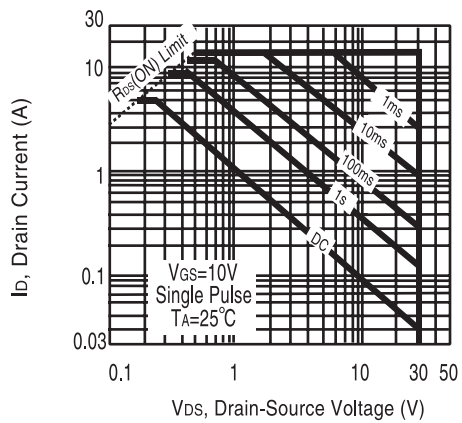


Figure 10. Maximum Safe Operating Area

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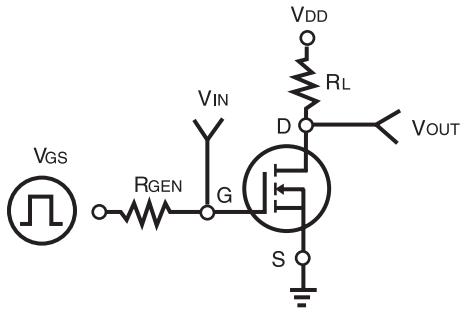


Figure 11. Switching Test Circuit

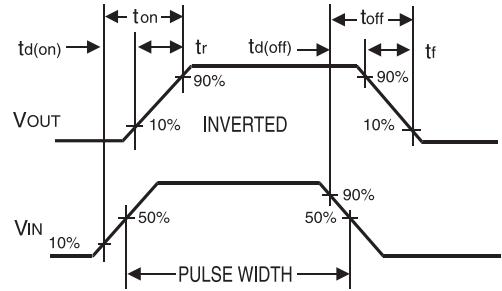


Figure 12. Switching Waveforms

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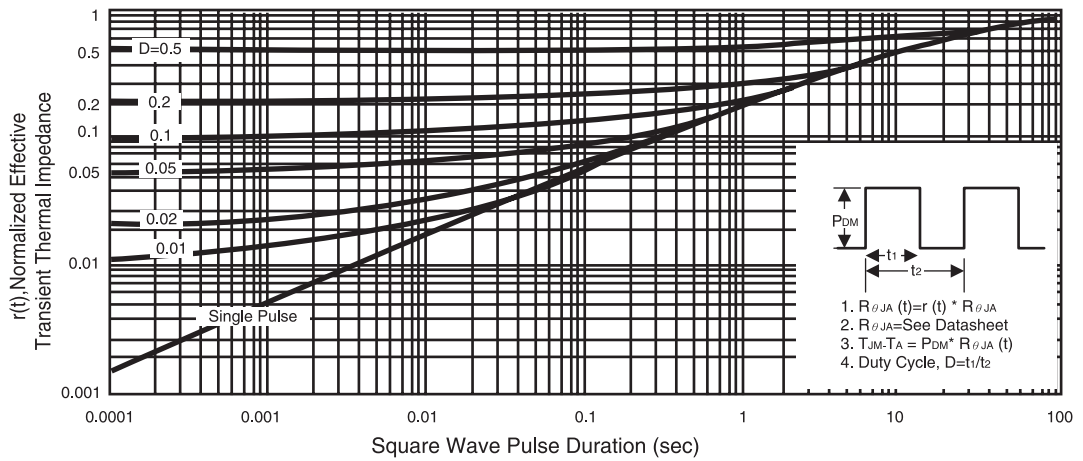


Figure 13. Normalized Thermal Transient Impedance Curve