

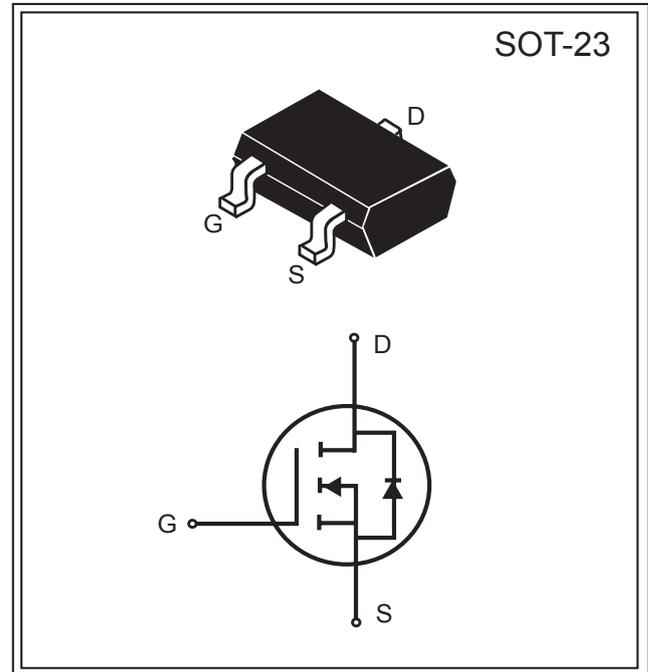


## Product Summary

V <sub>DS</sub> (V)	I <sub>D</sub> (A)	R <sub>DS(ON)</sub> (mΩ) Max
30V	3.5A	40 @V <sub>GS</sub> = 10V
		60 @V <sub>GS</sub> = 4.5V

## FEATURES

- ◆ Super high dense cell design for low R<sub>DS(ON)</sub>.
- ◆ Rugged and reliable.
- ◆ SOT-23 package.

ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous @ T <sub>c</sub> = 25°C	I <sub>D</sub>	3.5	A
-Pulsed <sup>b</sup>	I <sub>DM</sub>	13	A
Drain-Source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	1.25	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	1.25	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

## THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R <sub>θJA</sub>	100	°C/W
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Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$		30	40	$m\Omega$
		$V_{GS}=4.5V, I_D=2A$		50	60	
On-State Drain Current	$I_{D(on)}$	$V_{DS}=5V, V_{GS}=10V$	10			A
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=3.5A$		5		S
Input Capacitance	$C_{ISS}$	$V_{DS}=10V$		595		pF
Output Capacitance	$C_{OSS}$	$V_{GS}=0V$		125		
Reverse Transfer Capacitance	$C_{RSS}$	$f=1.0MHz$		93		
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=10V,$ $I_D=1A,$ $V_{GS}=10V,$ $R_{GEN}=6\Omega,$ $R_L=10\Omega$		14		ns
Rise Time	$t_r$			5		
Turn-Off Delay Time	$t_{D(off)}$			20		
Fall Time	$t_f$			9.5		
Total Gate Charge	$Q_g$	$V_{DS}=10V,$		7		nC
Gate-Source Charge	$Q_{gs}$	$I_D=3.5A,$		3		
Gate-Drain Charge	$Q_{gd}$	$V_{GS}=4.5V$		2		
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_D=1.25A$		0.8	1.2	V

## Notes :

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

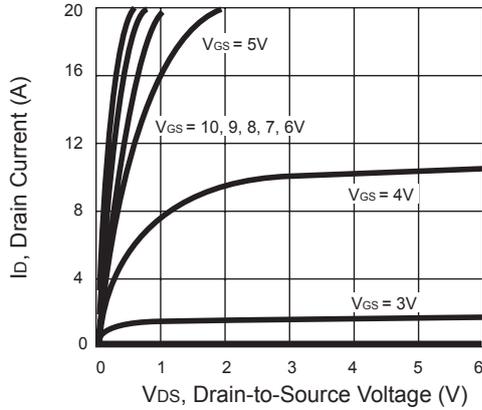


Figure 1. Output Characteristics

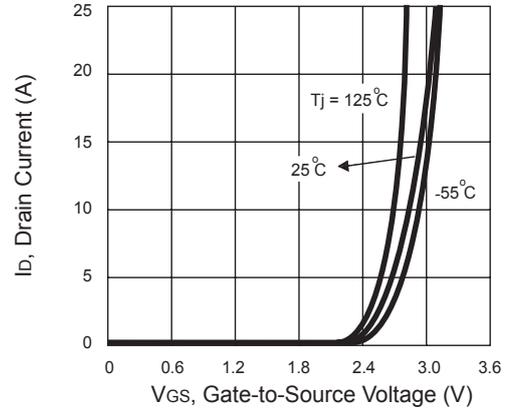


Figure 2. Transfer Characteristics

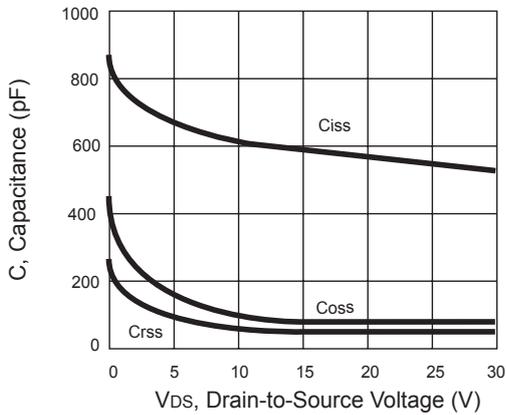


Figure 3. Capacitance

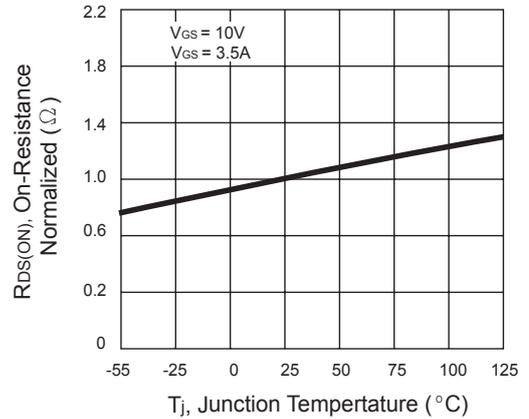


Figure 4. On-Resistance Variation with Temperature

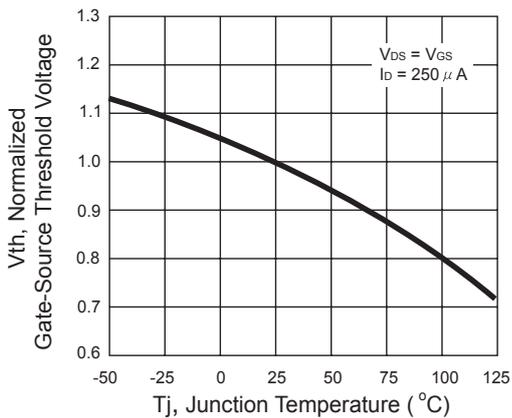


Figure 5. Gate Threshold Variation with Temperature

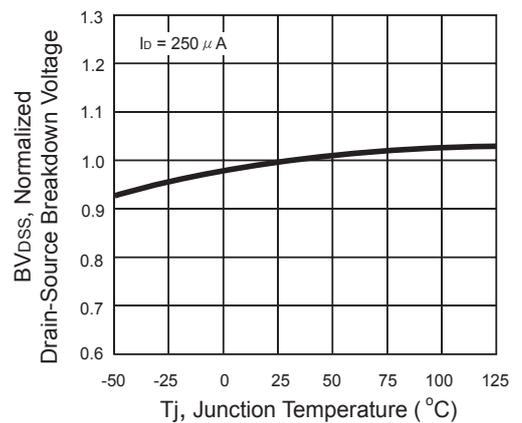


Figure 6. Breakdown Voltage Variation with Temperature

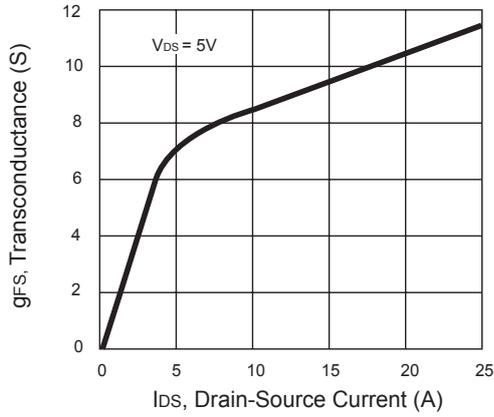


Figure 7. Transconductance Variation with Drain Current

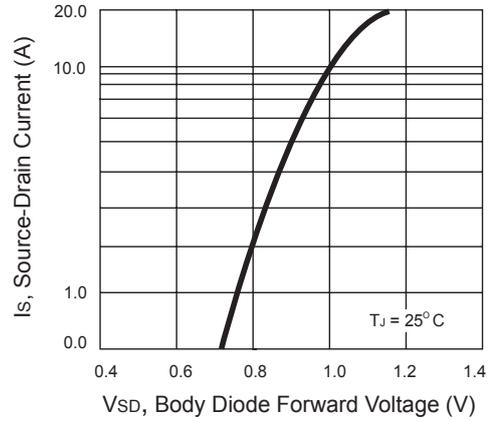


Figure 8. Body Diode Forward Voltage Variation with Source Current

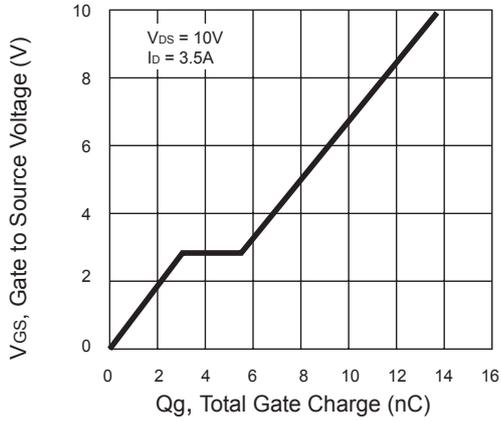


Figure 9. Gate Charge

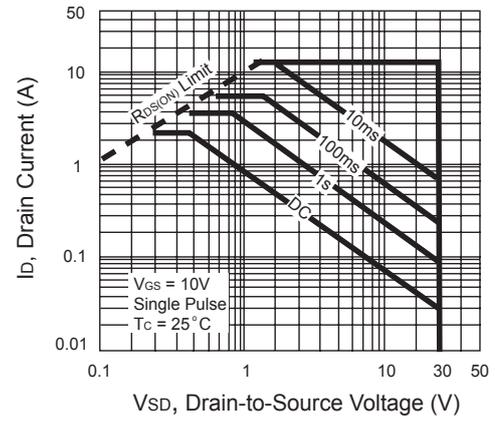


Figure 10. Maximum Safe Operating Area

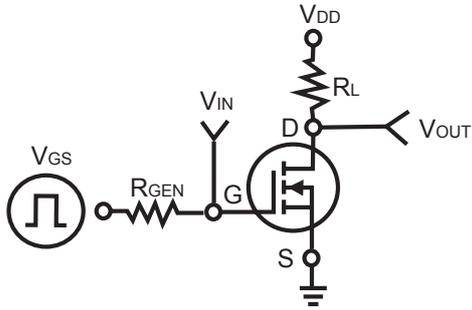


Figure 11. Switching Test Circuit

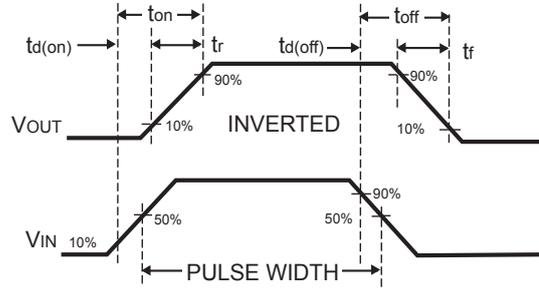


Figure 12. Switching Waveforms

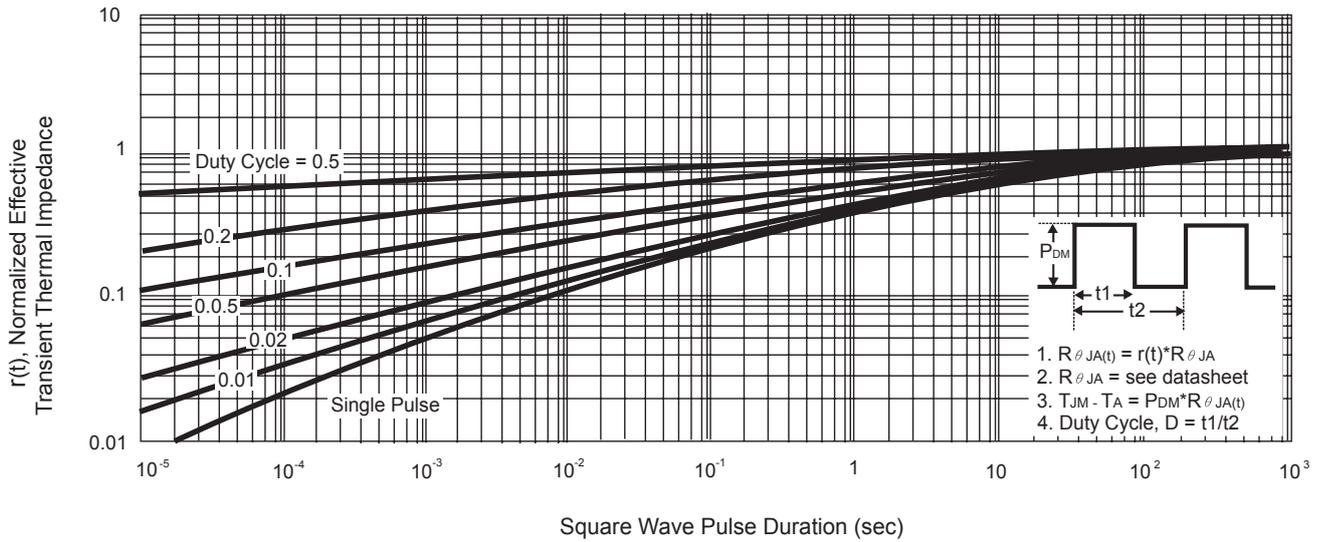


Figure 13. Normalized Thermal Transient Impedance Curve