

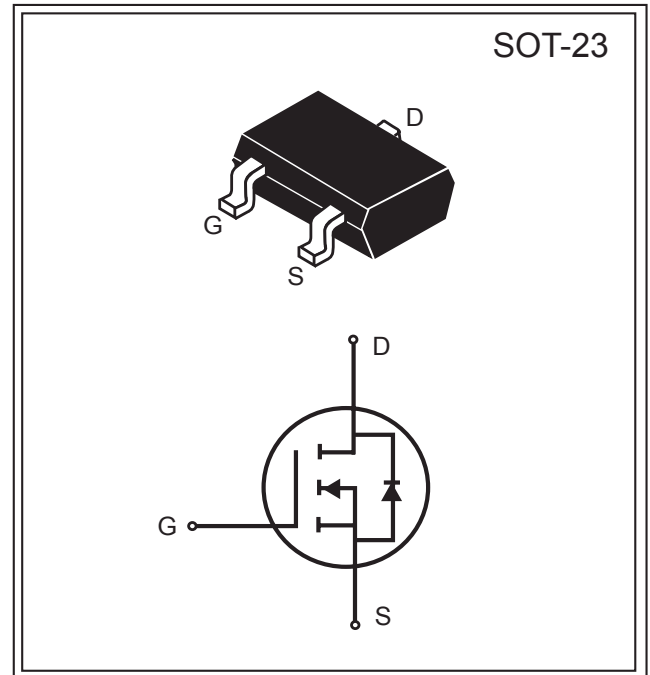


## Product Summary

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 (TA = 25°C unless otherwise noted)						
Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	1	1.6	2.5	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A		30	40	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A		50	60	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> =5V, V <sub>GS</sub> =10V	10			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =3.5A		5		S
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =10V		595		pF
Output Capacitance	C <sub>OSS</sub>	V <sub>GS</sub> =0V		125		
Reverse Transfer Capacitance	C <sub>RSS</sub>	f=1.0MHz		93		
Turn-On Delay Time	t <sub>D(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>GEN</sub> =6Ω, R <sub>L</sub> =10Ω		14		ns
Rise Time	t <sub>r</sub>			5		
Turn-Off Delay Time	t <sub>D(off)</sub>			20		
Fall Time	t <sub>f</sub>			9.5		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V,		7		nC
Gate-Source Charge	Q <sub>gs</sub>	I <sub>D</sub> =3.5A,		3		
Gate-Drain Charge	Q <sub>gd</sub>	V <sub>GS</sub> =4.5V		2		
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =1.25A		0.8	1.2	V

Notes :

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

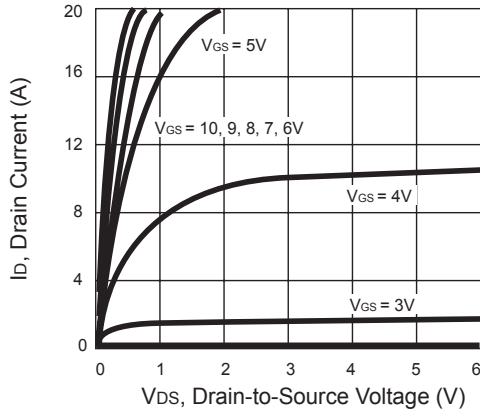


Figure 1. Output Characteristics

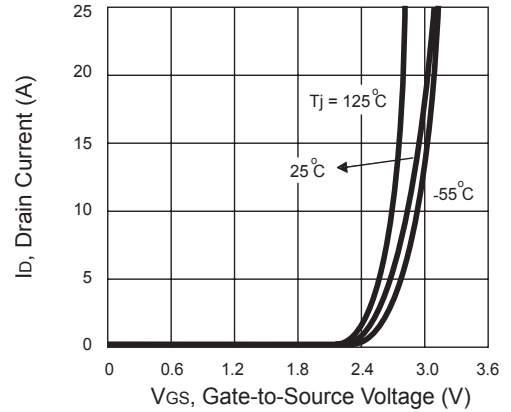


Figure 2. Transfer Characteristics

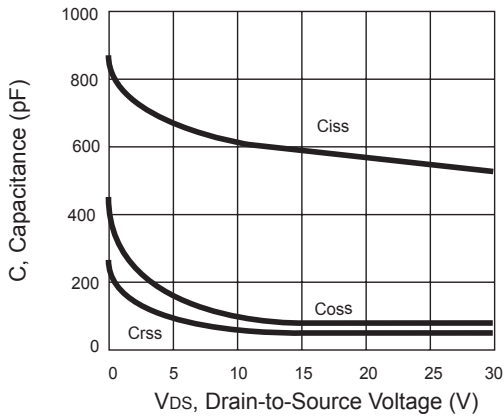


Figure 3. Capacitance

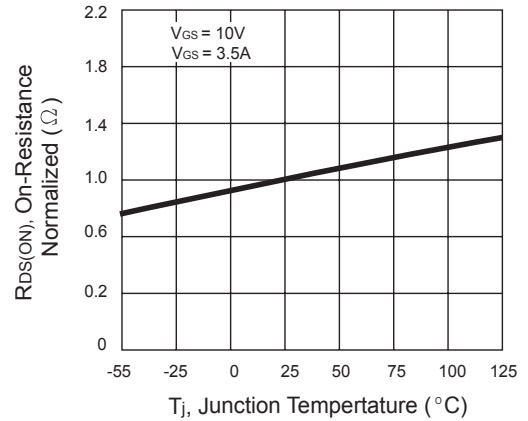


Figure 4. On-Resistance Variation with Temperature

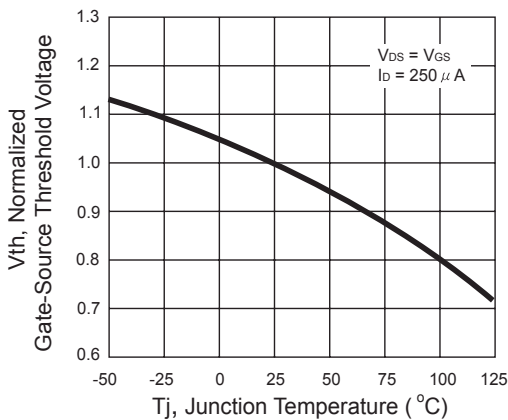


Figure 5. Gate Threshold Variation with Temperature

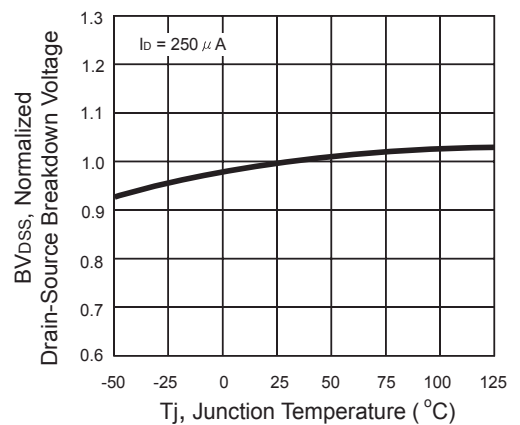
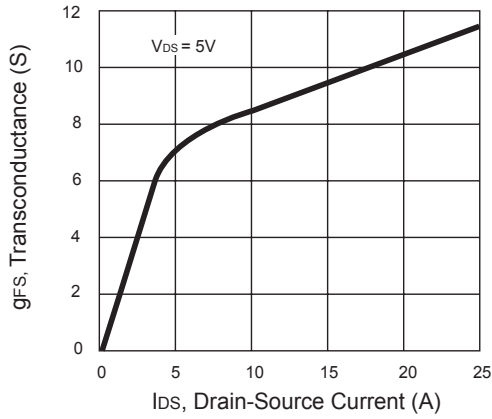
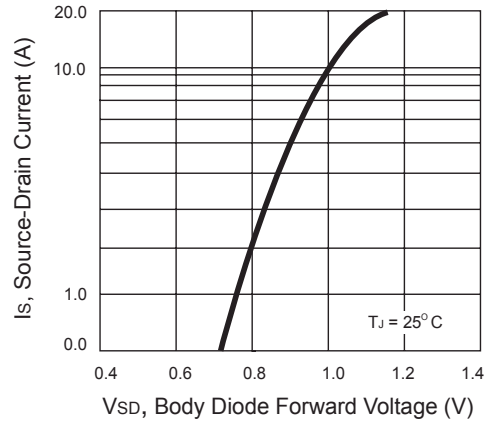


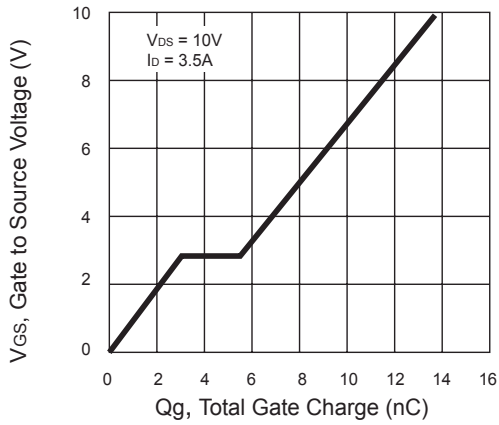
Figure 6. Breakdown Voltage Variation with Temperature



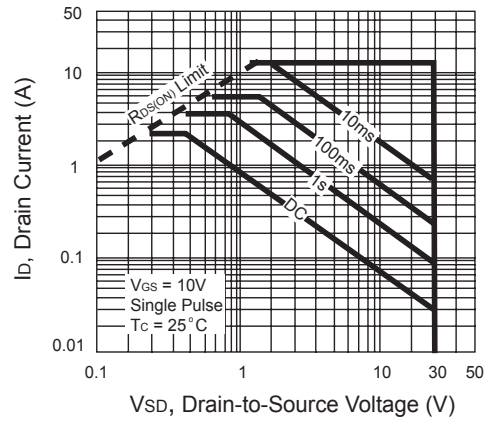
**Figure 7. Transconductance Variation with Drain Current**



**Figure 8. Body Diode Forward Voltage Variation with Source Current**



**Figure 9. Gate Charge**



**Figure 10. Maximum Safe Operating Area**

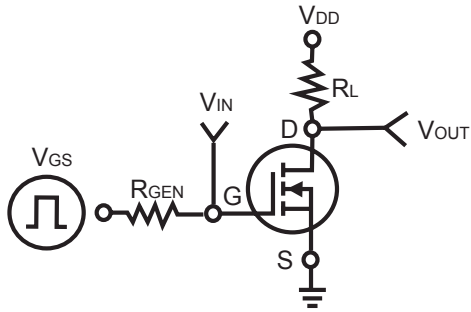


Figure 11. Switching Test Circuit

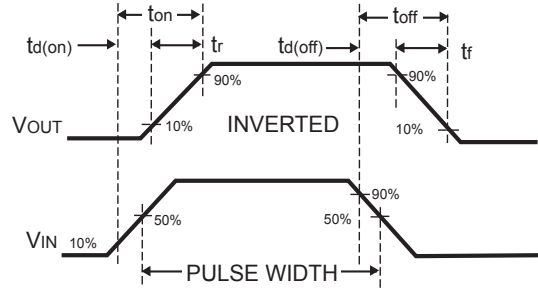


Figure 12. Switching Waveforms

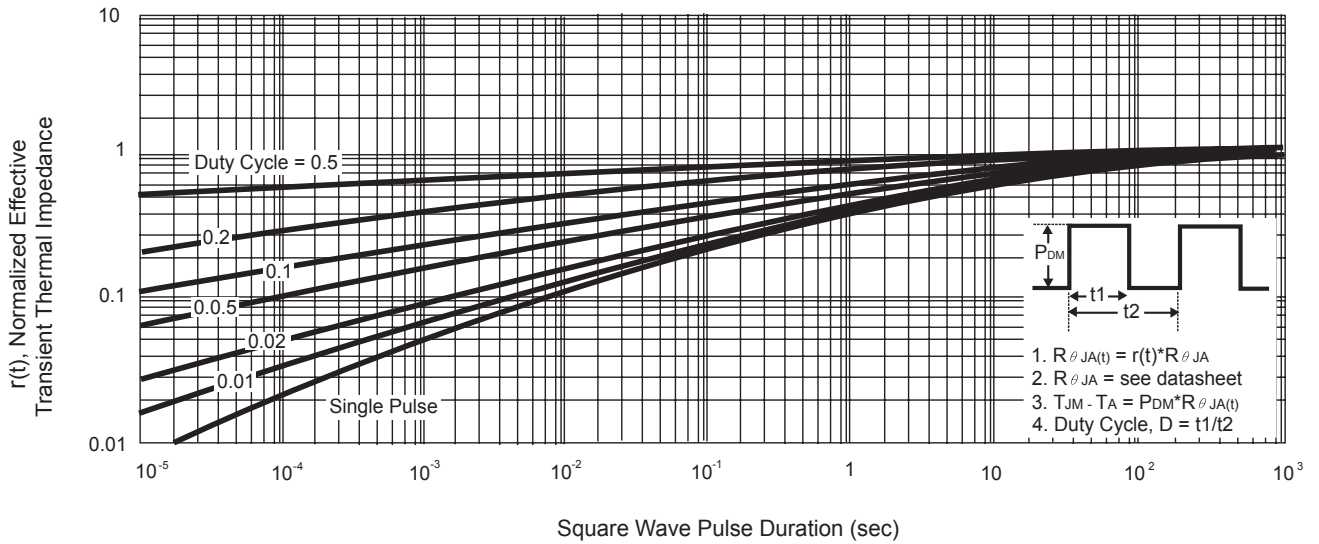


Figure 13. Normalized Thermal Transient Impedance Curve