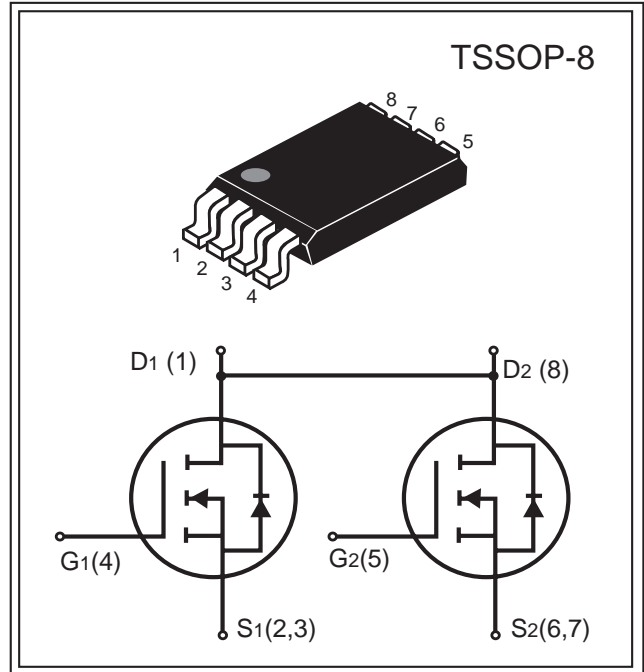




Product Summary		
V <sub>DS</sub> (V)	I <sub>D</sub> (A)	R <sub>DS(ON)</sub> (mΩ) Max
20V	6A	23 @V <sub>GS</sub> = 4.5V
		33 @V <sub>GS</sub> = 2.5V

### FEATURES

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



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Drain Current-Continuous @ T <sub>c</sub> = 25°C	I <sub>D</sub>	6	A
-Pulsed <sup>b</sup>	I <sub>DM</sub>	40	A
Drain-Source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	2	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	1.5	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>JA</sub>	85	°C/W
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South Sea Semiconductor reserves the right to make changes to improve reliability or manufacturability without advance notice.



Electrical Characteristics (T <sub>A</sub> = 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 μ A	20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μ A
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = ± 8V, V <sub>DS</sub> =0V			± 10	μ A
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A	0.5		1.3	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A		16	23	m
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A		20	33	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =7A		30		S
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =10V		1158		pF
Output Capacitance	C <sub>OSS</sub>	V <sub>GS</sub> =0V		188		
Reverse Transfer Capacitance	C <sub>RSS</sub>	f=1.0MHz		145		
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1A, V <sub>GS</sub> =5V, R <sub>GEN</sub> =3 Ω , R <sub>L</sub> =1.35 Ω		6		ns
Rise Time	t <sub>r</sub>			12.5		
Turn-Off Delay Time	t <sub>D(OFF)</sub>			51.5		
Fall Time	t <sub>f</sub>			16		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =7A, V <sub>GS</sub> =4.5V		16		nC
Gate-Source Charge	Q <sub>gs</sub>			0.8		
Gate-Drain Charge	Q <sub>gd</sub>			3.8		
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =2A		0.8	1.0	V

Notes :

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

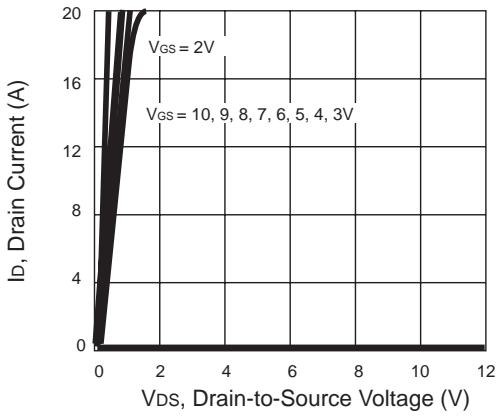


Figure 1. Output Characteristics

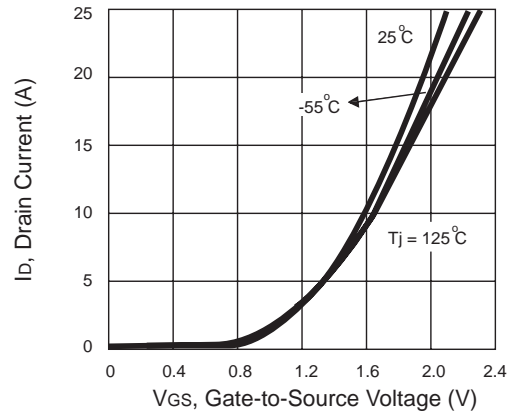


Figure 2. Transfer Characteristics

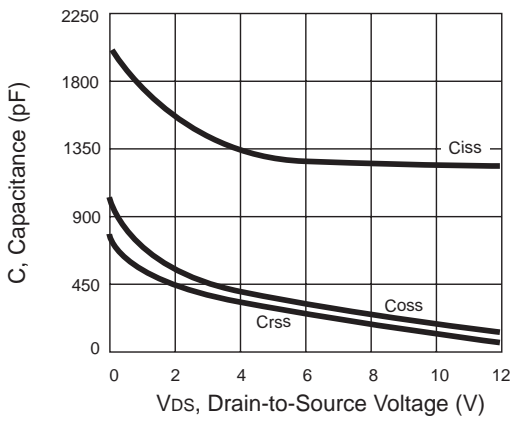


Figure 3. Capacitance

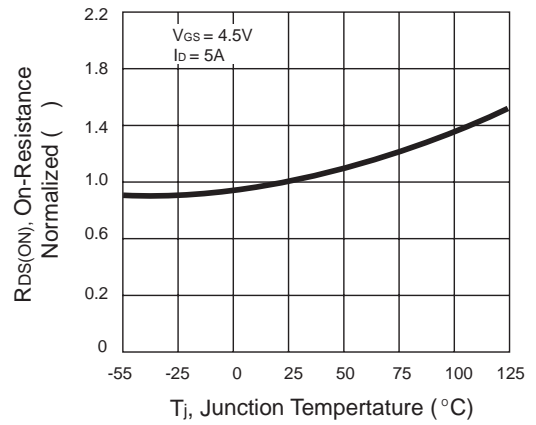


Figure 4. On-Resistance Variation with Temperature

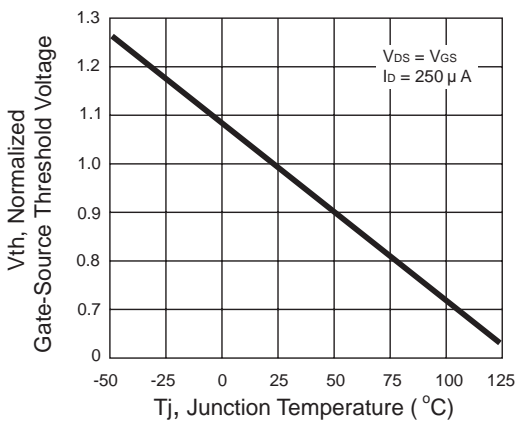


Figure 5. Gate Threshold Variation with Temperature

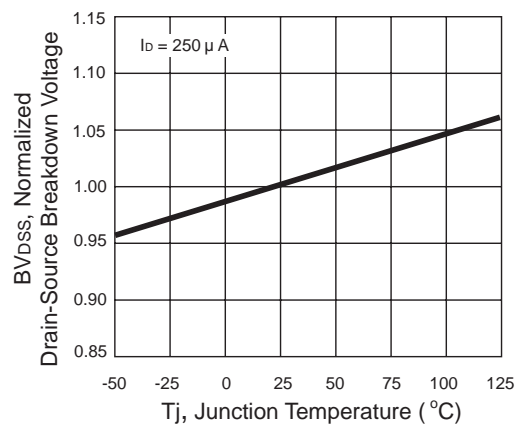
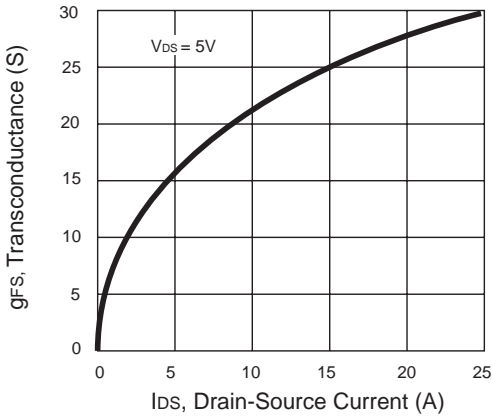
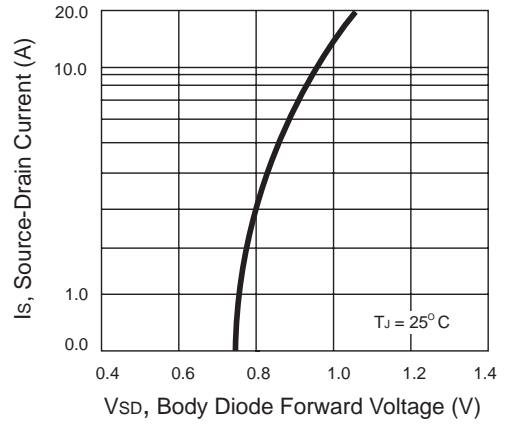


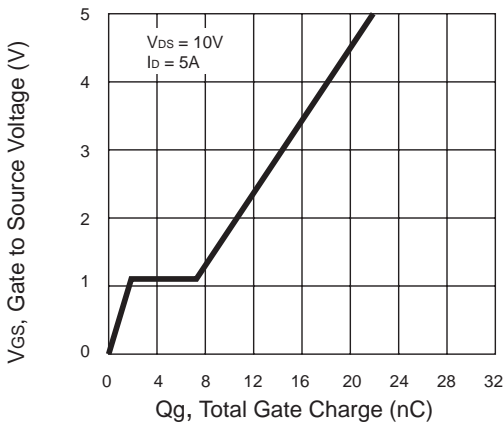
Figure 6. Breakdown Voltage Variation with Temperature



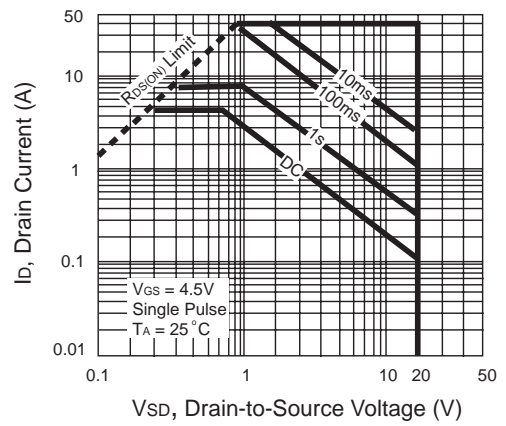
**Figure 7. Transconductance Variation with Drain Current**



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



**Figure 9. Gate Charge**



**Figure 10. Maximum Safe Operating Area**

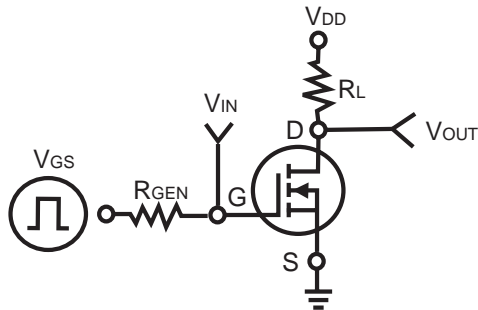


Figure 11. Switching Test Circuit

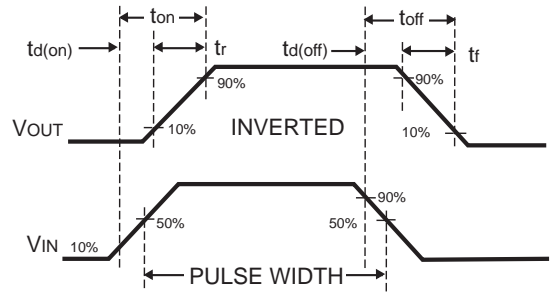


Figure 12. Switching Waveforms

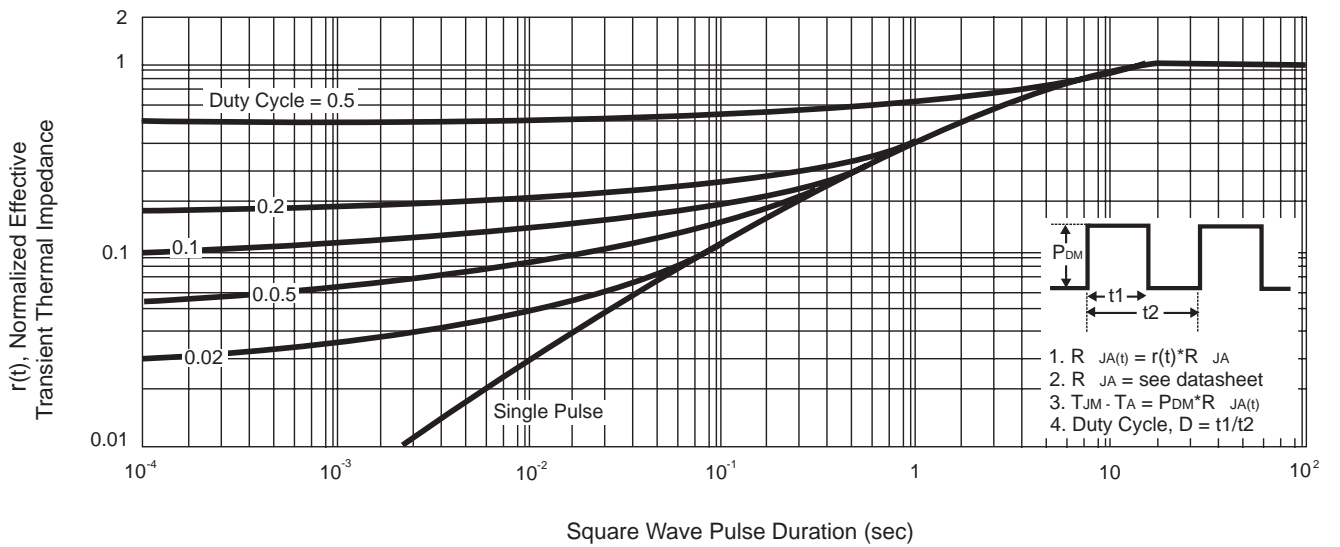


Figure 13. Normalized Thermal Transient Impedance Curve