

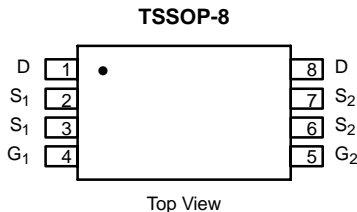
## Dual N-Channel 2.5-V (G-S) MOSFET Common Drain, ESD Protection

### PRODUCT SUMMARY

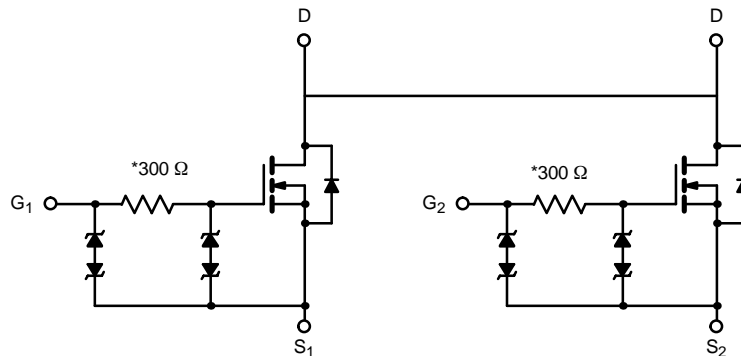
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
20	0.022 @ $V_{GS} = 4.5$ V	6.5
	0.030 @ $V_{GS} = 2.5$ V	5.5

### FEATURES

- TrenchFET® Power MOSFET
- ESD Protected: 3000 V



Ordering Information:  
Si6968BEDQ-T1 (with Tape and Reel)



\*Typical value by design

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	$V_{DS}$	20		V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$			
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	6.5	5.2	A
		$T_A = 70^\circ\text{C}$	5.5	3.5	
Pulsed Drain Current	$I_{DM}$	30			
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.5	1.0	W	
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.5		1.0
		$T_A = 70^\circ\text{C}$	0.96		0.64
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$	

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typ	Max	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	$t \leq 10$ sec	72	83	$^\circ\text{C/W}$
		Steady-State	100	120	
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	55	70		

Notes

a. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

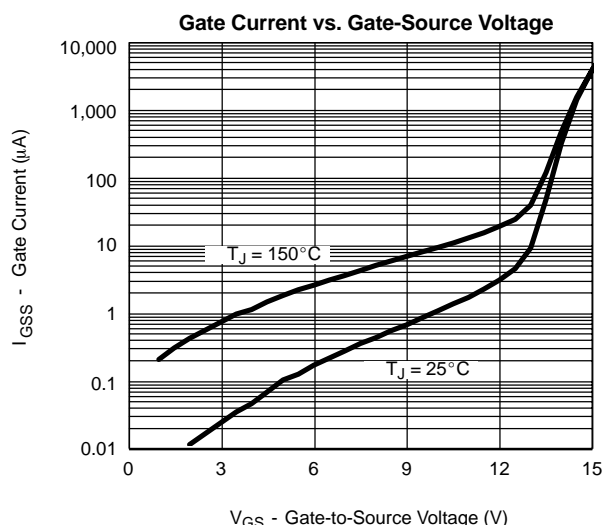
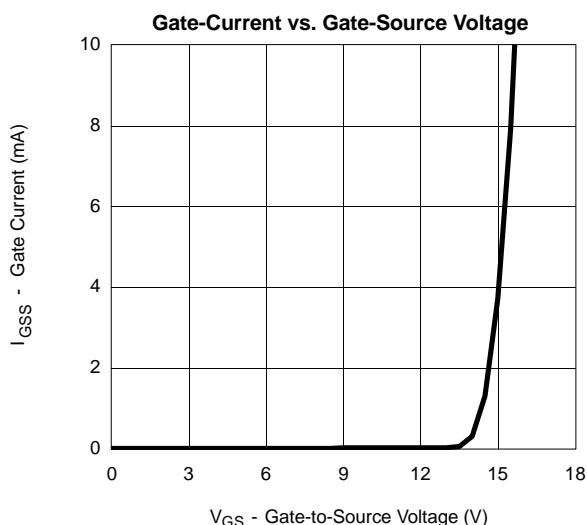


<b>SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	0.6		1.6	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±4.5 V			±200	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 70 °C			25	
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ 5 V, V <sub>GS</sub> = 4.5 V	30			A
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6.5 A		0.0165	0.022	Ω
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 5.5 A		0.023	0.030	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 6.5 A		30		S
Diode Forward Voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.5 A, V <sub>GS</sub> = 0 V		0.71	1.2	V
<b>Dynamic<sup>a</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6.5 A		12	18	nC
Gate-Source Charge	Q <sub>gs</sub>			2.2		
Gate-Drain Charge	Q <sub>gd</sub>			3.6		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 4.5 V, R <sub>G</sub> = 6 Ω		245	365	ns
Rise Time	t <sub>r</sub>			330	495	
Turn-Off Delay Time	t <sub>d(off)</sub>			860	1300	
Fall Time	t <sub>f</sub>			510	765	

**Notes**

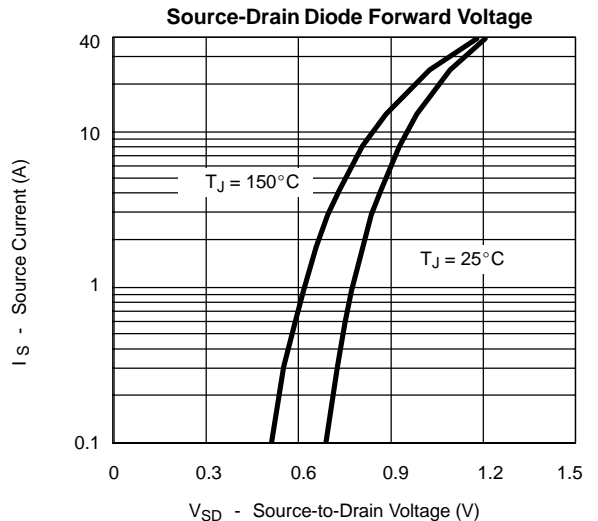
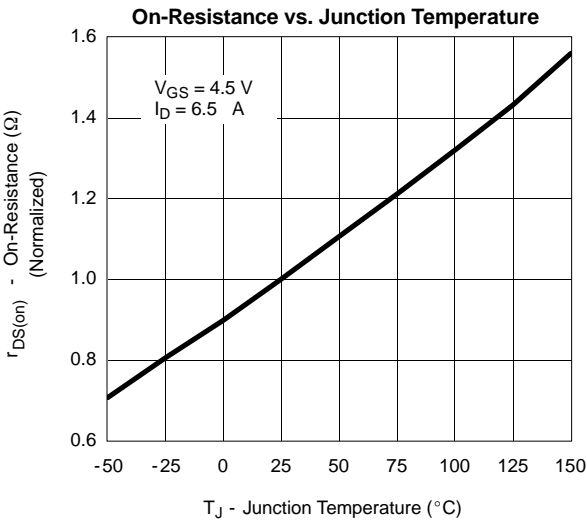
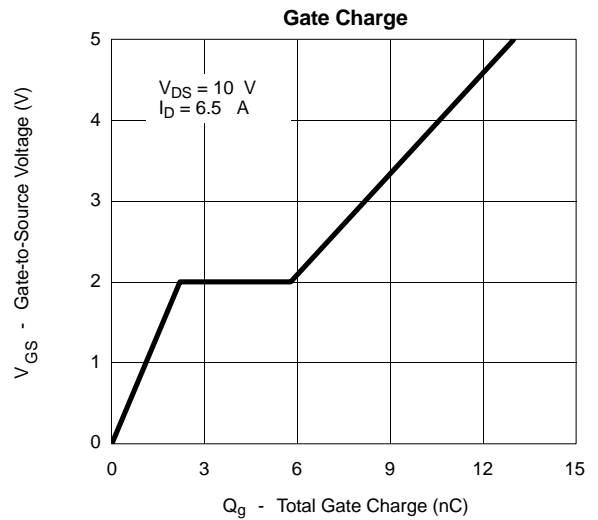
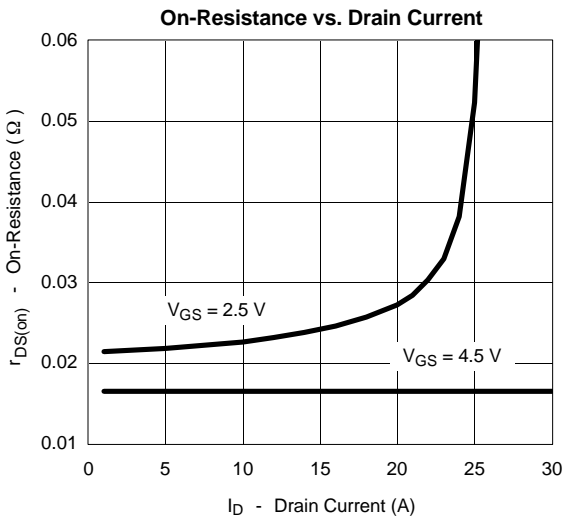
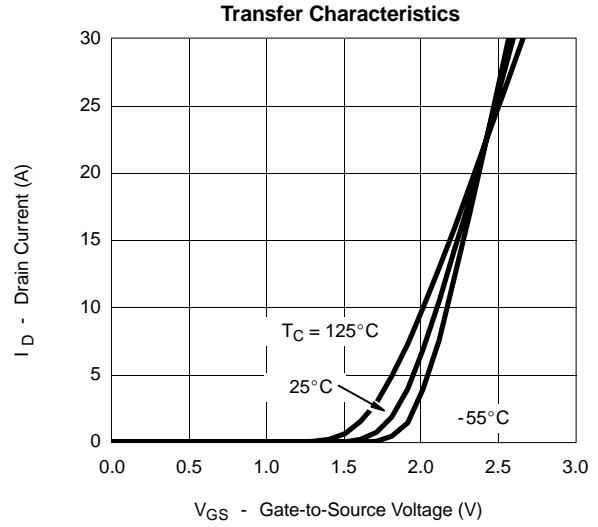
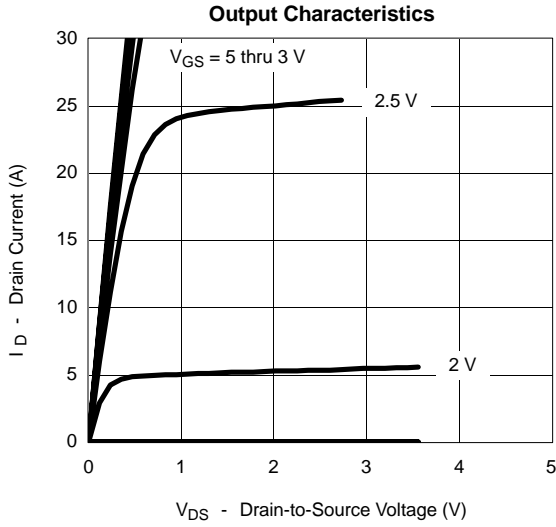
- a. For design aid only; not subject to production testing.
- b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

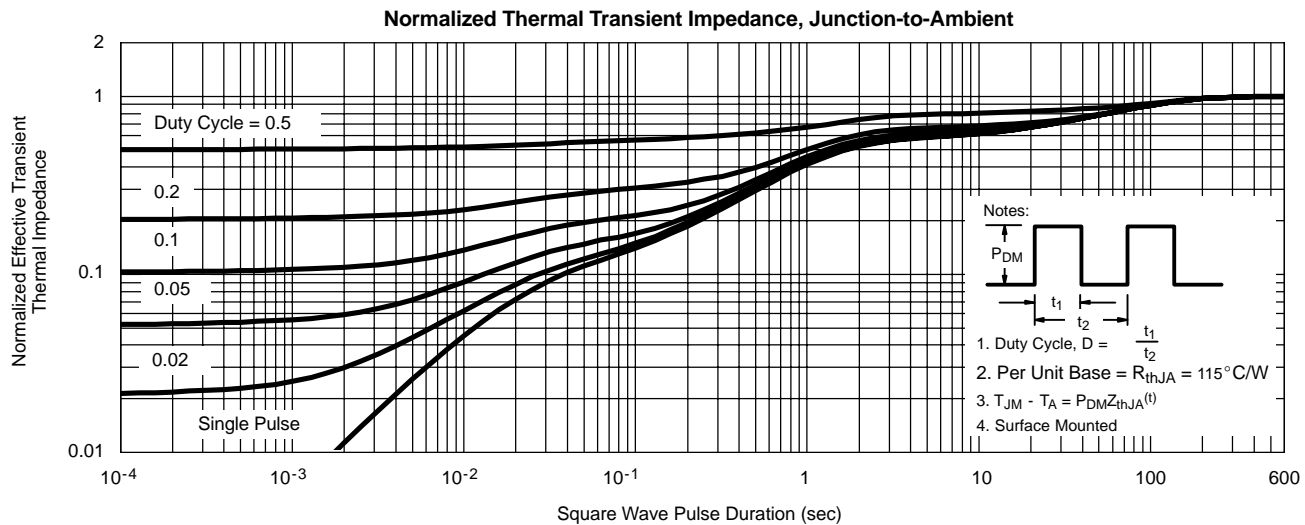
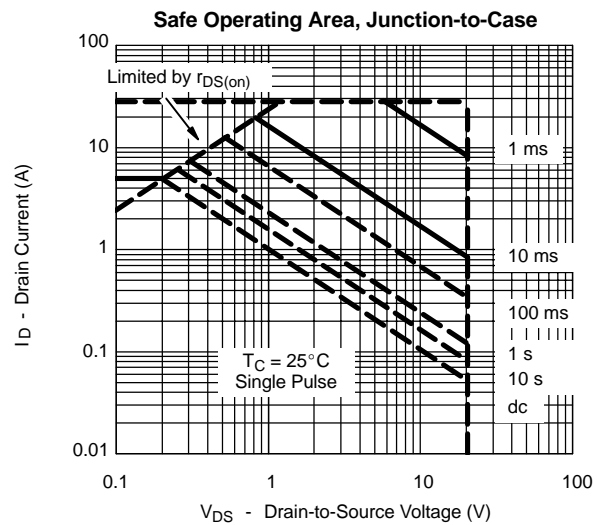
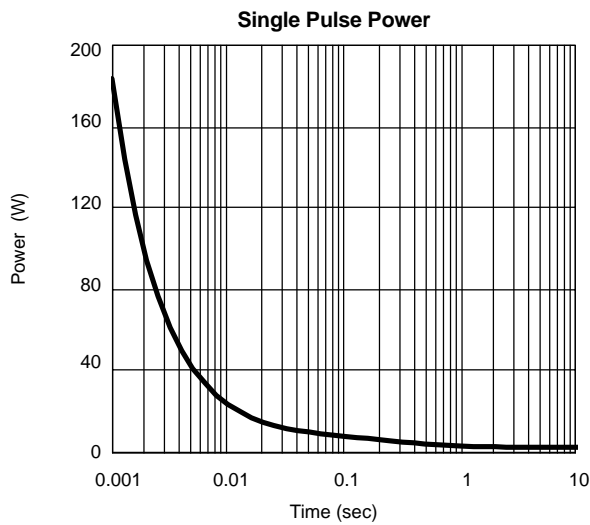
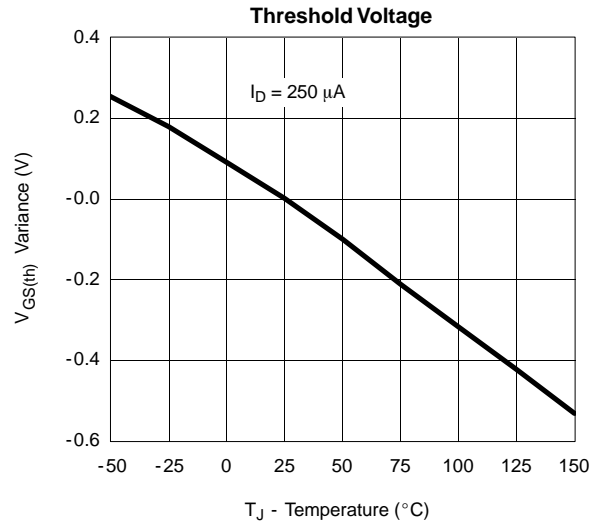
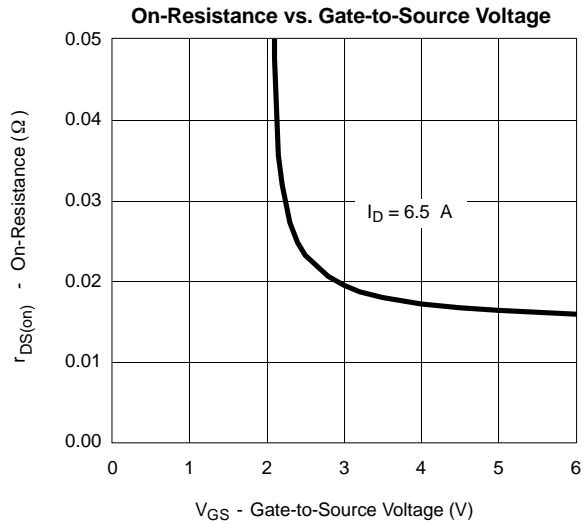




**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

