Bi-Directional N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{S1S2} (V)	$r_{S1S2(on)}$ (Ω)	I_{S1S2} (A)
30	0.025 @ V_{GS} = 10 V	6.2
	0.030 @ V_{GS} = 4.5 V	5.7
	0.050 @ V_{GS} = 2.5 V	4.5

FEATURES

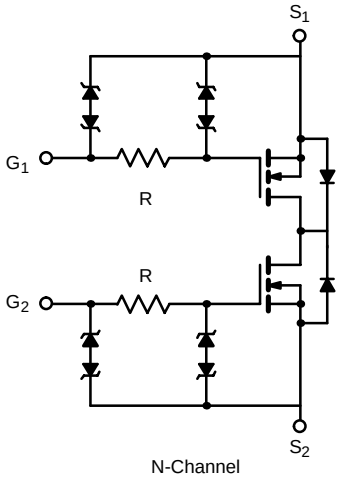
- TrenchFET® Power MOSFET
- Ultra-Low $r_{SS(on)}$
- 4-kV ESD Protection

APPLICATIONS

- Battery Protection Circuitry
  - 1-2 Cell Li+/LiP

TSSOP-8

Top View



N-Channel

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Source1—Source2 Voltage		V_{S1S2}	30		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Source1—Source2 Current (T_J = 150°C)[a]	T_A = 25°C	I_{S1S2}	6.2	5.0	A
	T_A = 70°C		5.0	4.0	
Pulsed Source1-Source2 Current		I_{SM}	30		
Maximum Power Dissipation[a]	T_A = 25°C	P_D	1.78	1.19	W
	T_A = 70°C		1.14	0.76	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 10 sec.	R_{thJA}	55	70	°C/W
	Steady State		85	105	
Maximum Junction-to-Foot (Source)[a]	Steady State	R_{thJF}	35	45	

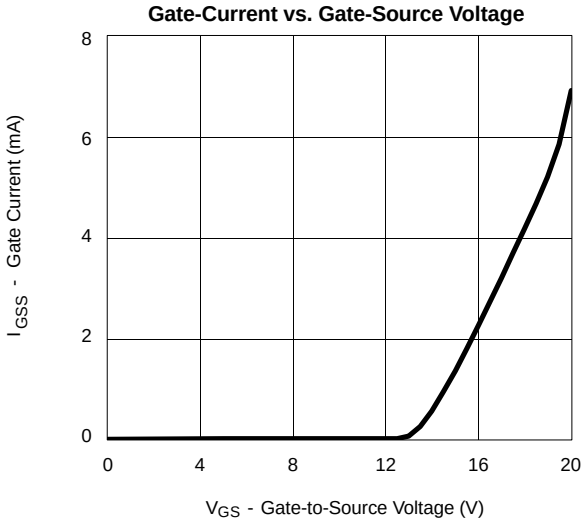
Notes
a. Surface Mounted on FR4 Board.
b. t ≤ 10 sec.

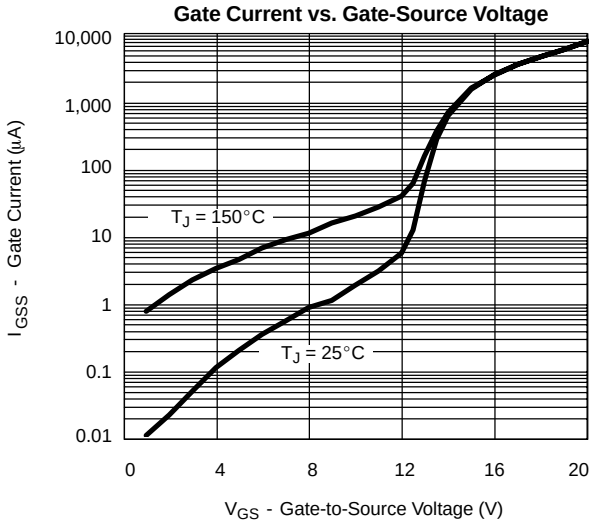
SPECIFICATIONS (T_J =25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	0.45		1.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±4.5 V			±500	nA
		V_{DS} = 0 V, V_{GS} = ±12 V			±10	mA
Zero Gate Voltage Source Current	I_{S1S2}	V_{DS} = 24 V, V_{GS} = 0 V			1	μA
		V_{DS} = 24 V, V_{GS} = 0 V, T_J = 70°C			25	
On-State Source Current[a]	$I_{S(on)}$	V_{DS} ≥ 5 V, V_{GS} = 4.5 V	20			A
Source1-Source2 On-State Resistance[a]	$r_{S1S2(on)}$	V_{GS} = 10 V, I_D = 6.2 A		0.020	0.025	Ω
		V_{GS} = 4.5 V, I_D = 5.7 A		0.024	0.030	
		V_{GS} = 2.5 V, I_D = 4.5 A		0.037	0.050	
Forward Transconductance[a]	g_{fs}	V_{DS} = 10 V, I_D = 6.2 A		39		S
Dynamic[b]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 15 V, R_L = 15 Ω I_D ≅ 1 A, V_{GEN} = 10 V, R_G = 6 Ω		1.3	2.5	μs
Rise Time	t_r			3	6	
Turn-Off Delay Time	$t_{d(off)}$			10	20	
Fall Time	t_f			5.2	10	

Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

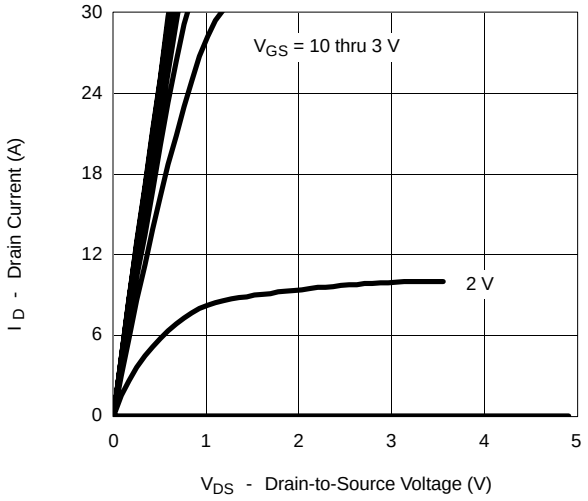
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



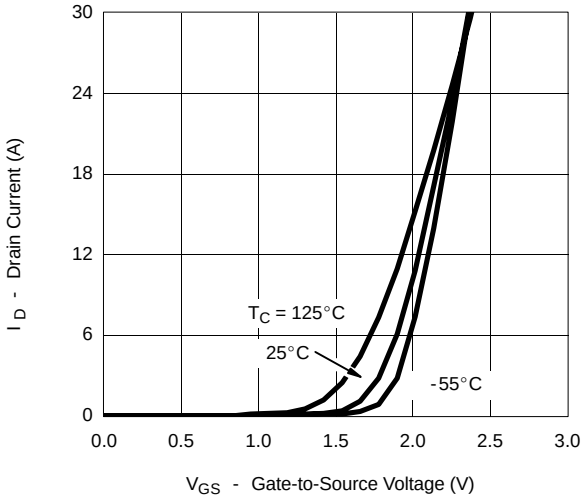


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

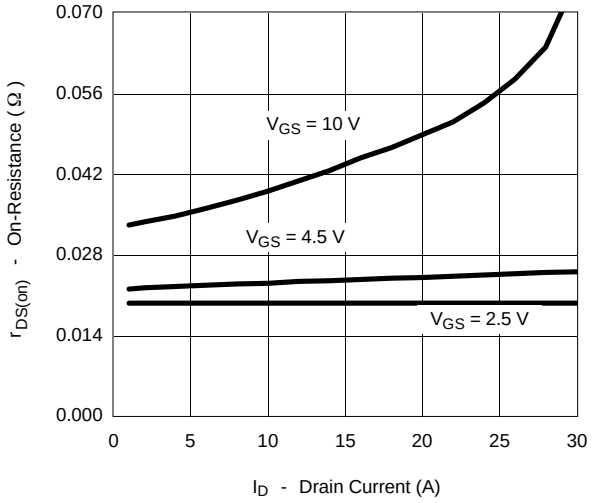
Output Characteristics



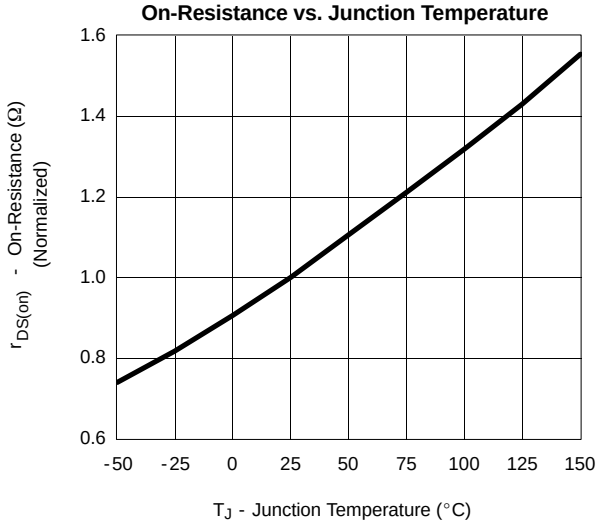
Transfer Characteristics



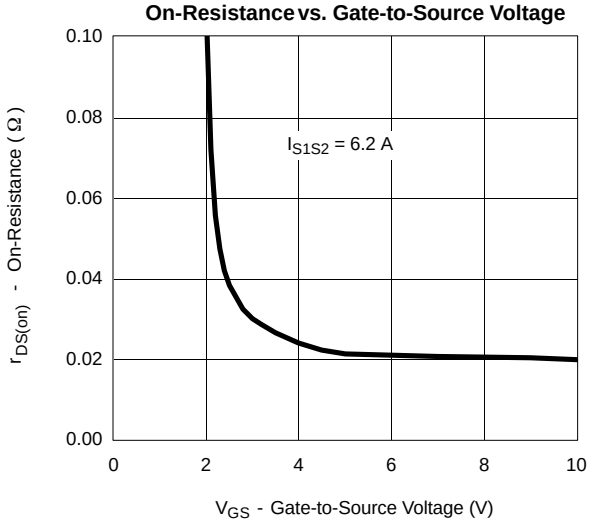
On-Resistance vs. Drain Current



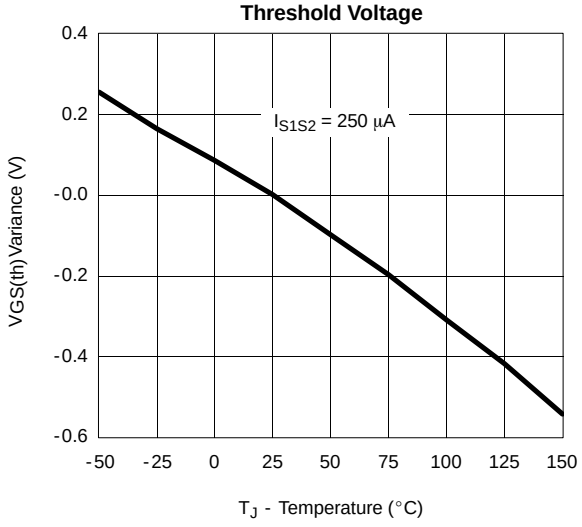
On-Resistance vs. Junction Temperature



On-Resistance vs. Gate-to-Source Voltage

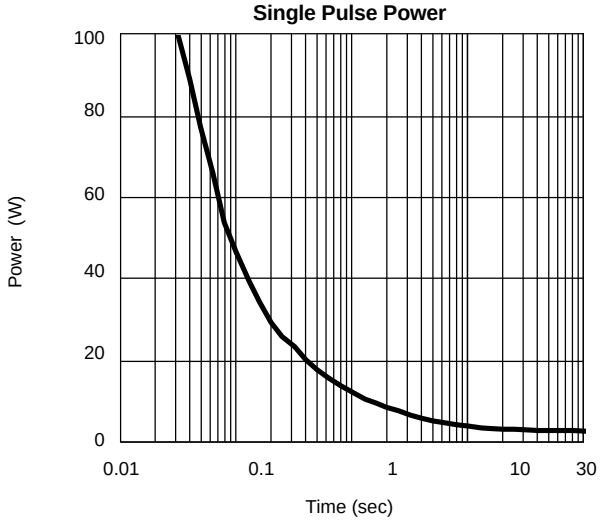


Threshold Voltage

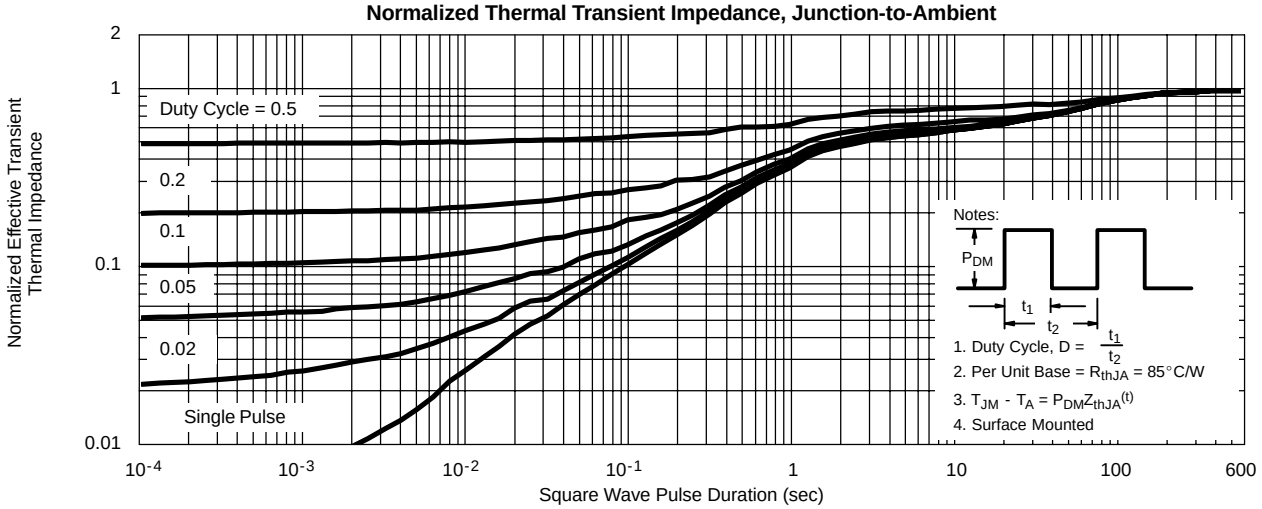


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot