



N-Channel 1.8-V (G-S) MOSFET

FEATURES

- TrenchFET® Power MOSFET: 1.8- V Rated
- Gate- Source ESD Protected: 2000 V
- High- Side Switching
- Low On- Resistance: 0.7Ω
- Low Threshold: 0.8 V (typ)
- Fast Switching Speed: 10ns
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC- Q101 Qualified and PPAP Capable.

BENEFITS

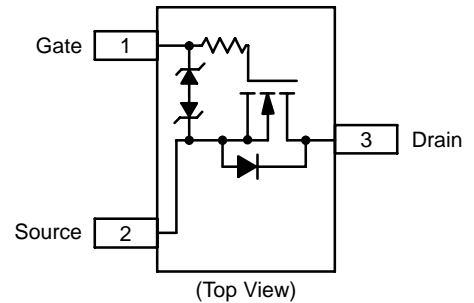
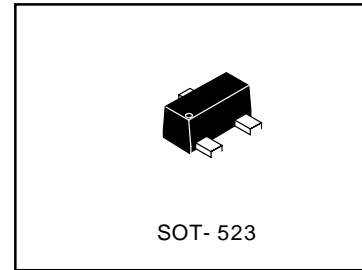
- Ease in Driving Switches
- Low Offset (Error) Voltage
- Low- Voltage Operation
- High- Speed Circuits
- Low Battery Voltage Operation

APPLICATIONS

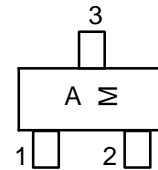
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

ORDERING INFORMATION

Device	Marking	Shipping
FTK1012	A	3000/Tape&Reel



MARKING DIAGRAM



B = Specific Device Code
M = Month Code

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain- Source Voltage		V _{DS}	20		V
Gate- Source Voltage		V _{GS}	±6		
Continuous Drain Current (T _J = 150°C) ^b	T _A = 25°C	I _D	600	500	mA
	T _A = 85°C		400	350	
Pulsed Drain Current		I _{DM}	1000		
Continuous Source Current (diode conduction)		I _S	- 275	- 250	
Maximum Power Dissipation	T _A = 25°C	P _D	275	250	mW
	T _A = 85°C		160	140	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C
Gate- Source ESD Rating (HBM, Method 3015)		ESD	2000		V

Notes

- d. Pulse width limited by maximum junction temperature.
- e. Surface Mounted on FR4 Board.



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SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.45		0.9	V
Gate - Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±4.5 V		±0.5	±1.0	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V		0.3	100	nA
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 85°C			5	μA
On - State Drain Current	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	700			mA
Drain - Source On - State Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 600 mA		0.41	0.70	Ω
		V _{GS} = 2.5 V, I _D = 500 mA		0.53	0.85	
		V _{GS} = 1.8 V, I _D = 350 mA		0.70	1.25	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 400 mA		1.0		S
Diode Forward Voltage ^a	V _{SD}	I _S = 150 mA, V _{GS} = 0 V		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 250 mA		750		pC
Gate - Source Charge	Q _{gs}			75		
Gate - Drain Charge	Q _{gd}			225		
Turn - On Delay Time	t _{d(on)}	V _{DD} = 10 V, R _L = 47 Ω I _D ≅ 200 mA, V _{GEN} = 4.5 V, R _G = 10 Ω		5		ns
Rise Time	t _r			5		
Turn - Off Delay Time	t _{d(off)}			25		
Fall Time	t _f			11		

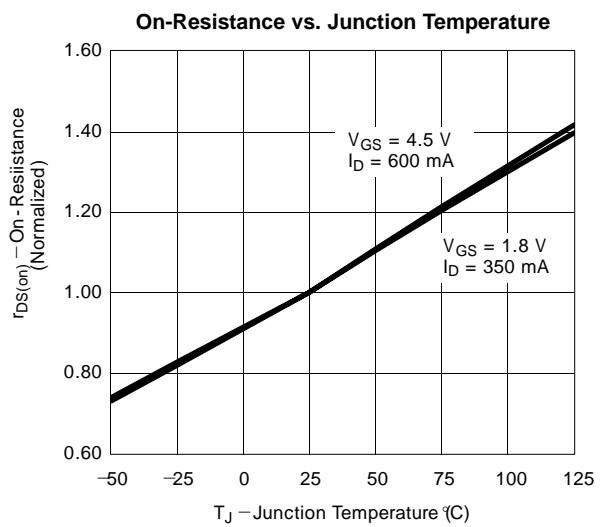
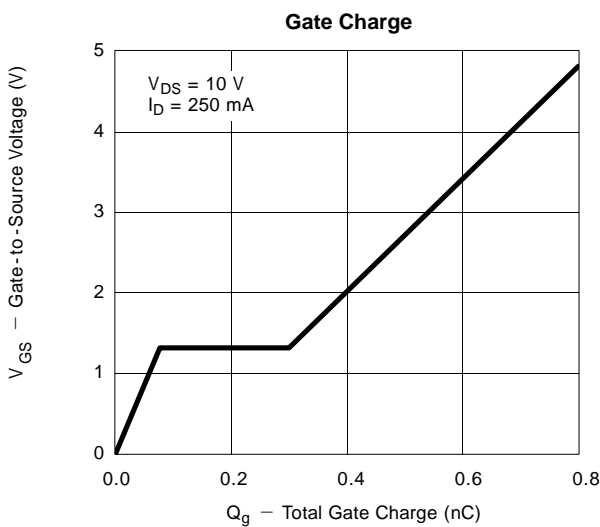
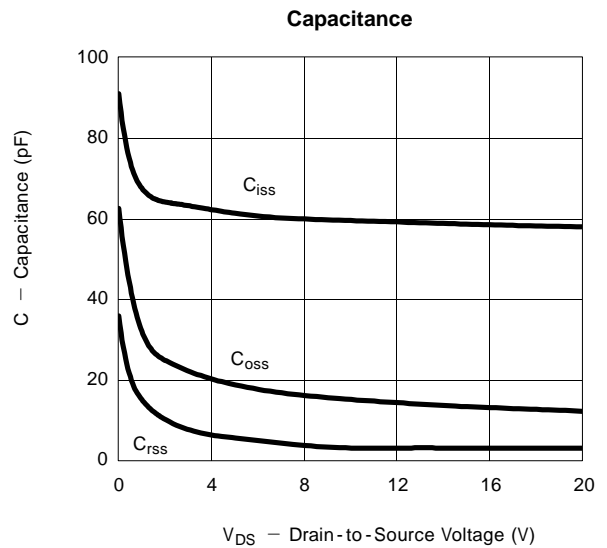
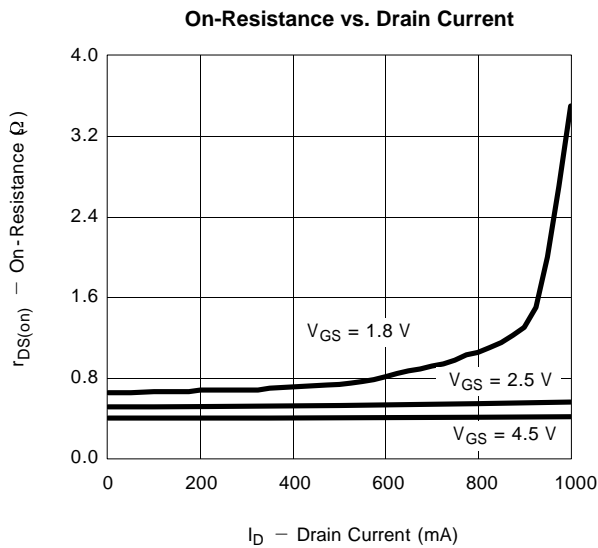
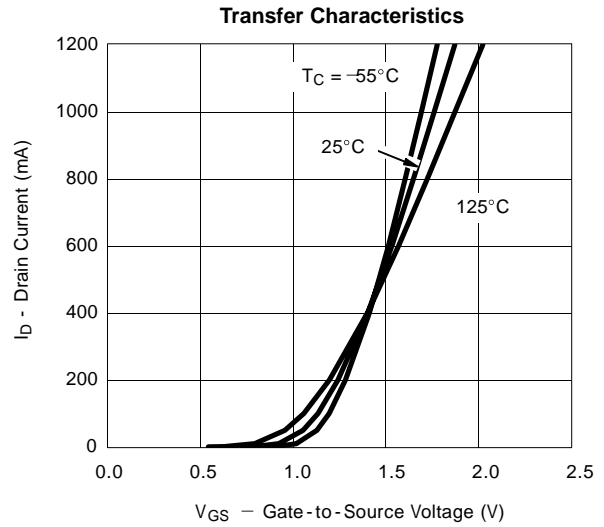
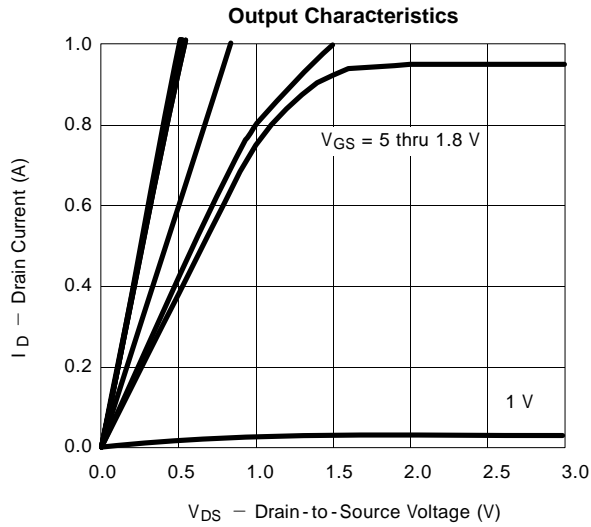
Notes

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

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS NOTED)

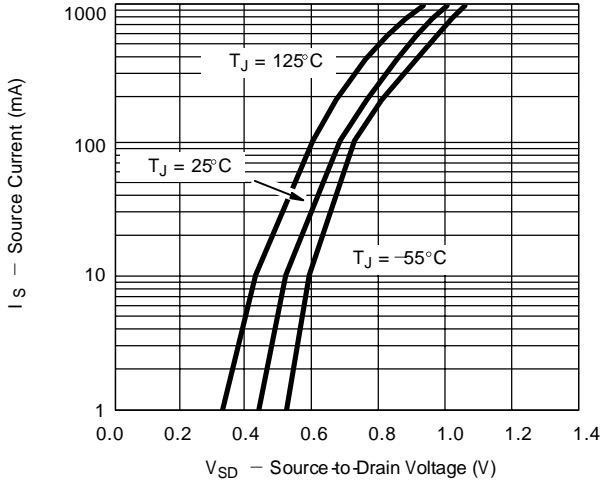
For the following graphs, p-channel negative polarities for all voltage and current values are represented as positive values.



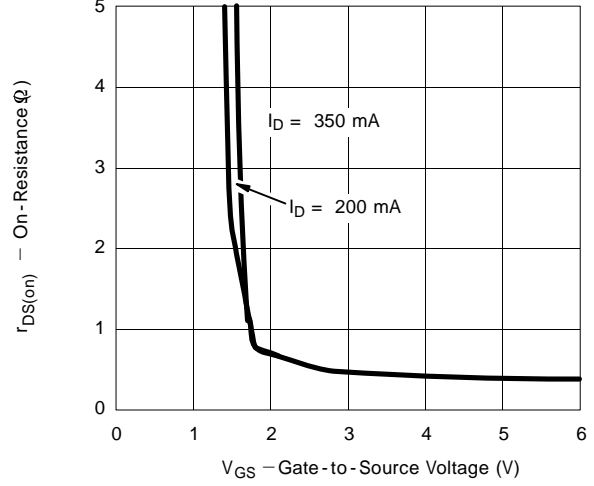


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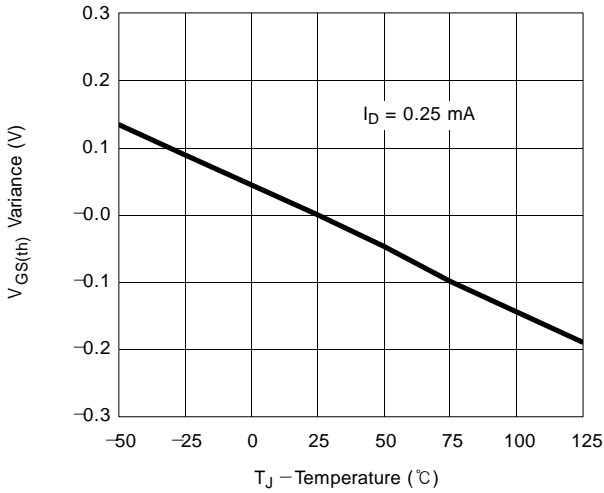
Source-Drain Diode Forward Voltage



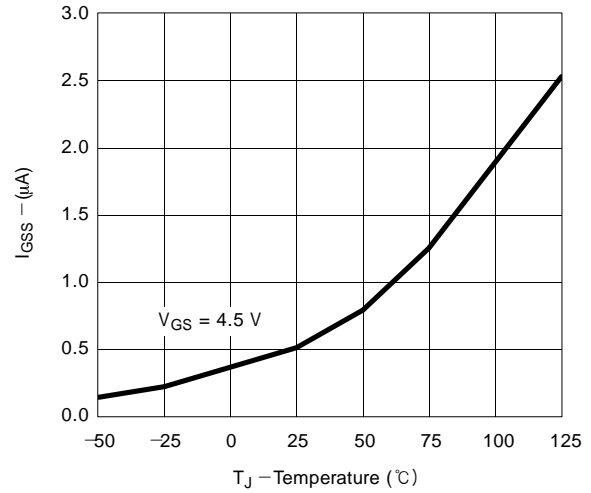
On-Resistance vs. Gate-to-Source Voltage



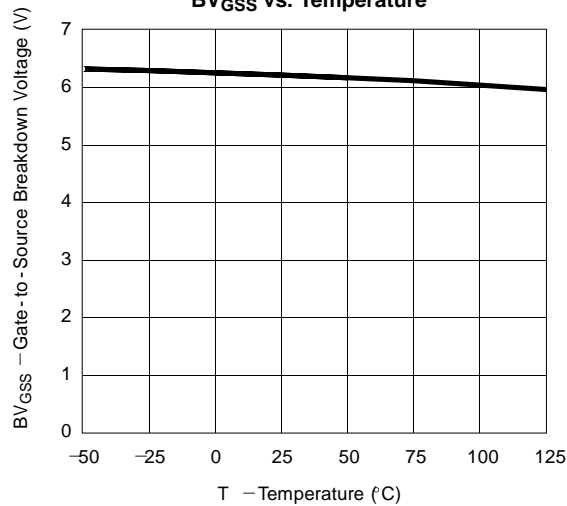
Threshold Voltage Variance vs. Temperature



IGSS vs. Temperature



BVGSS vs. Temperature

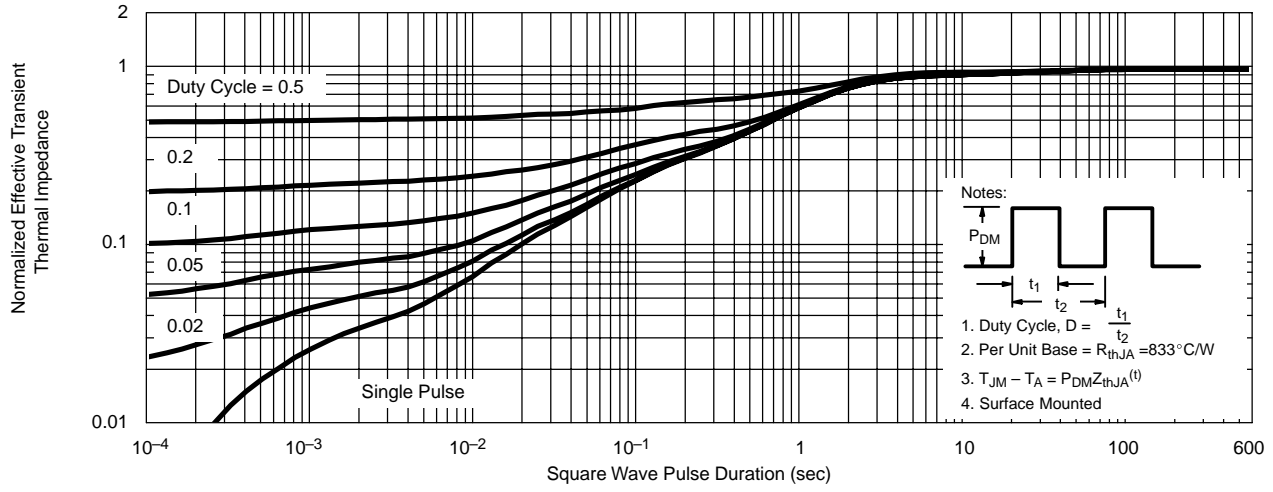




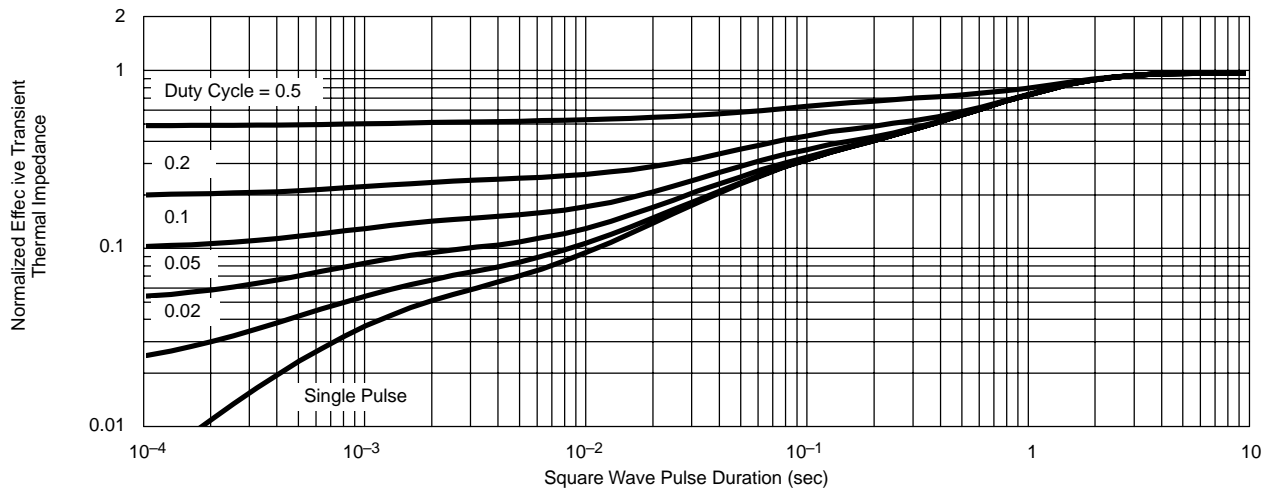
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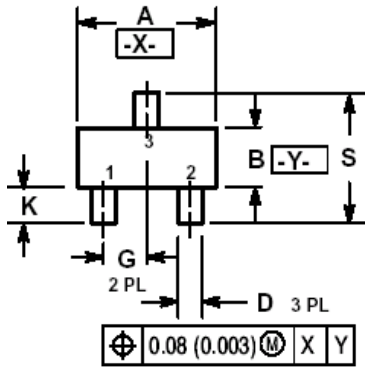
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



SOT-523



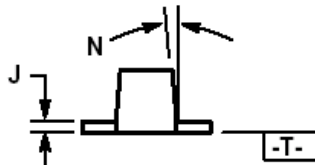
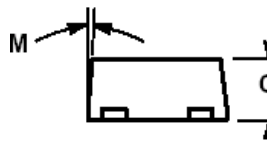
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

2. CONTROLLING DIMENSION: MILLIMETERS

3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

4. 463C-01 OBSOLETE, NEW STANDARD 463C-02.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10 °	---	---	10 °
N	---	---	10 °	---	---	10 °
S	1.50	1.60	1.70	0.059	0.063	0.067

