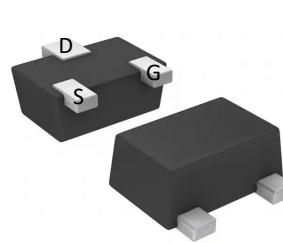


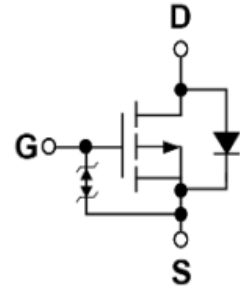
Features

- * $V_{DS} = -20V$, $I_D = -0.8A$
- * $R_{DS(ON)} = \text{Typ } 530m\Omega @ V_{GS} = -4.5V$
- * $R_{DS(ON)} = \text{Typ } 730m\Omega @ V_{GS} = -2.5V$
- * ESD protected
- * SOT-723 package

Package and Circuit diagram

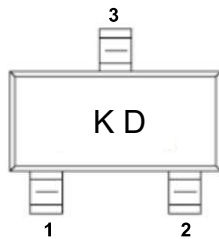


SOT-723



Circuit diagram

Marking diagram



1. Gate
2. Source
3. Drain

Ordering Information

Part Number	Packaging	Reel Size
FSNTK3139PT1G	8000/Tape & Reel	7 inch

Absolute maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ($T_A = 25^\circ\text{C}$)	-0.8	A
I_D	Continuous Drain Current ($T_A = 70^\circ\text{C}$)	-0.5	A
I_{DM}	Pulsed Drain Current ^{note1}	-2.4	A
P_D	Power Dissipation ($T_A = 25^\circ\text{C}$)	0.2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	$^\circ\text{C}/\text{W}$
T_J	Maximum Junction Temperature	-40 ~ +150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics (T_A=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
Off characteristics						
V _{(BR)DS}	Drain-source breakdown voltage	V _{GS} = 0V, I _D = -250μA	-20			V
I _{DS}	Zero gate voltage drain current	V _{DS} = -20V, V _{GS} = 0V			-1	μA
I _{GS}	Gate to body leakage current	V _{DS} = 0V, V _{GS} = ±12V			±10	μA
On characteristics						
V _{GS(th)}	Gate threshold voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.5	-0.75	-1.0	V
R _{DS(on)}	Static drain-source on resistance ^{Note2}	V _{GS} = -4.5V, I _D = -0.55A		530	640	mΩ
		V _{GS} = -2.5V, I _D = -0.45A		730	950	mΩ
		V _{GS} = -1.8V, I _D = -0.35A		1300	1950	mΩ
Dynamic characteristics						
C _{iss}	Input capacitance	V _{DS} = -10V		58		pF
C _{oss}	Output capacitance	V _{GS} = 0V		5.7		pF
C _{rss}	Reverse transfer capacitance	f = 1MHz		4.4		pF
Q _g	Total gate charge	V _{DS} = -10V		0.8		nC
Q _{gs}	Gate-source charge	I _D = -1A		0.2		nC
Q _{gd}	Gate-drain charge	V _{GS} = -4.5V		0.2		nC
Switching characteristics						
td(on)	Turn-on delay time	V _{DS} = -10V		400		ns
tr	Turn-on rise time	I _D = -1A		60		ns
td(off)	Turn-off delay time	R _{GEN} = 6Ω		20		ns
tf	Turn-off fall time	V _{GS} = -4.5V		800		ns
Drain-source diode characteristics and maximum ratings						
V _{SD}	Drain to source diode forward voltage	V _{GS} = 0V, I _S = -1A		-0.75	-1.1	V
I _S	Maximum continuous drain to source diode forward current				- 0.8	A
trr	Body diode reverse recovery time	I _F = -1A, di/dt = 100A/μs		9.2		ns
Qrr	Body diode reverse recovery charge			0.8		nC

Notes: 1. Repetitive rating: pulse width limited by maximum junction temperature

2. Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%

Typical performance characteristics ($T_A=25^{\circ}\text{C}$ unless otherwiseSpecified)

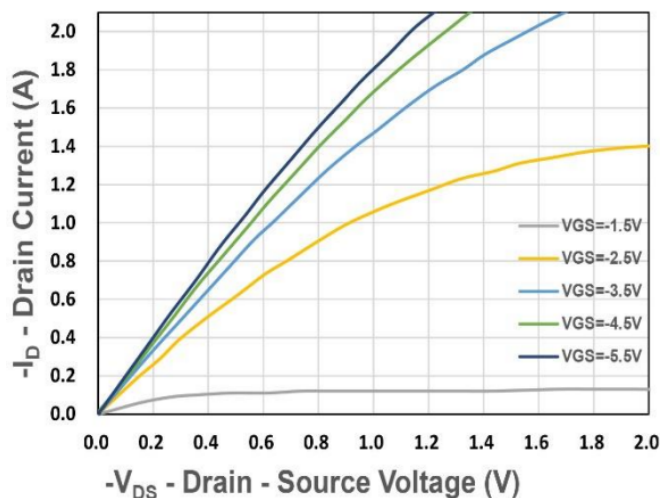


Figure 1. Output Characteristics

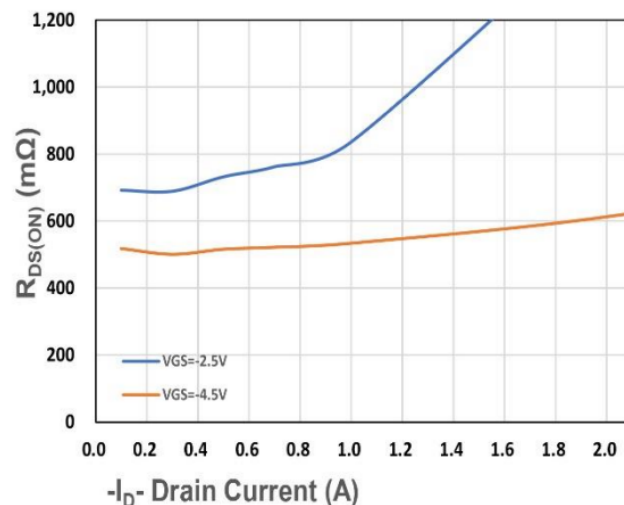


Figure 2. On-Resistance vs. I_D

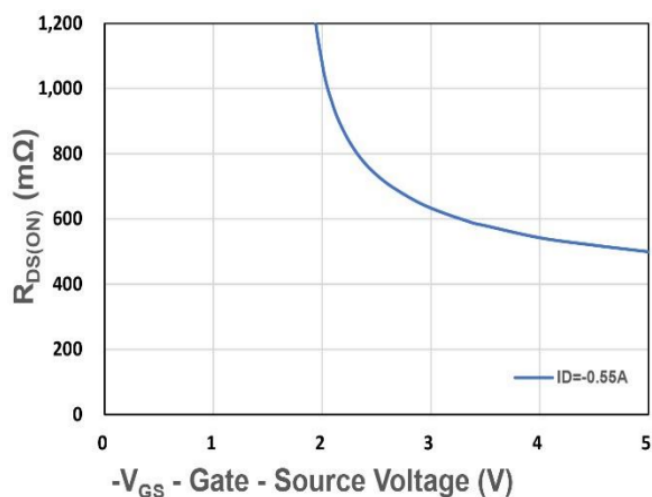


Figure 3. On-Resistance vs. V_{GS}

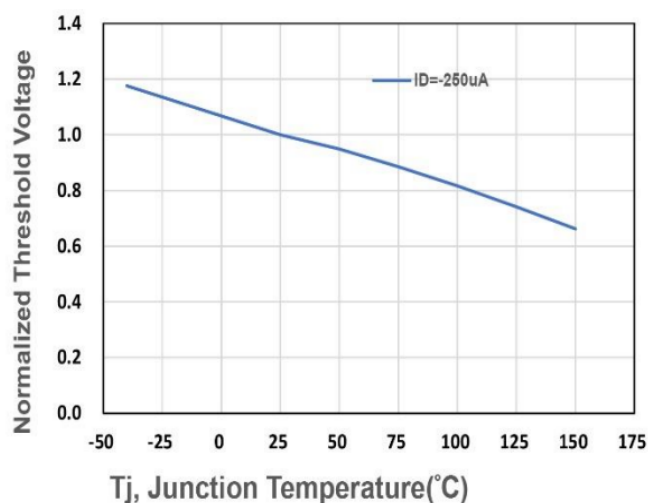


Figure 4. Gate Threshold Voltage

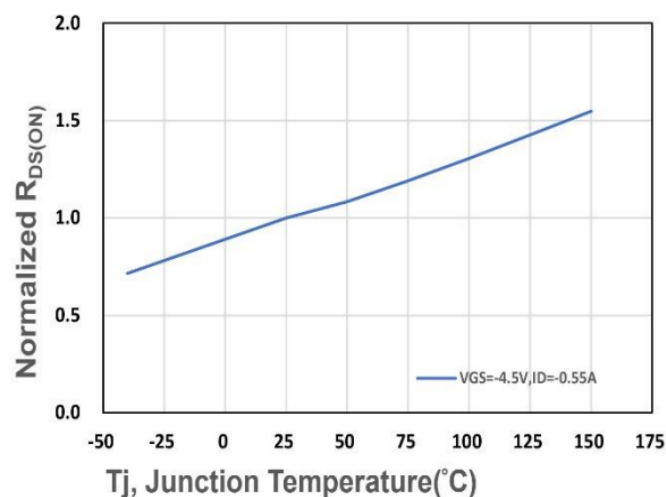


Figure 5. Drain-Source On Resistance

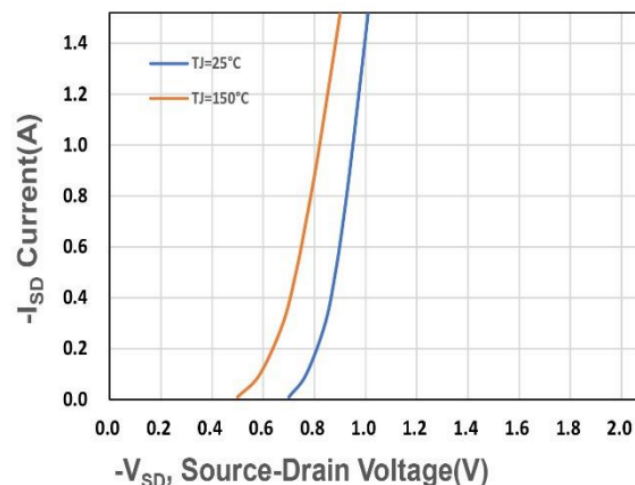


Figure 6. Source-Drain Diode Forward

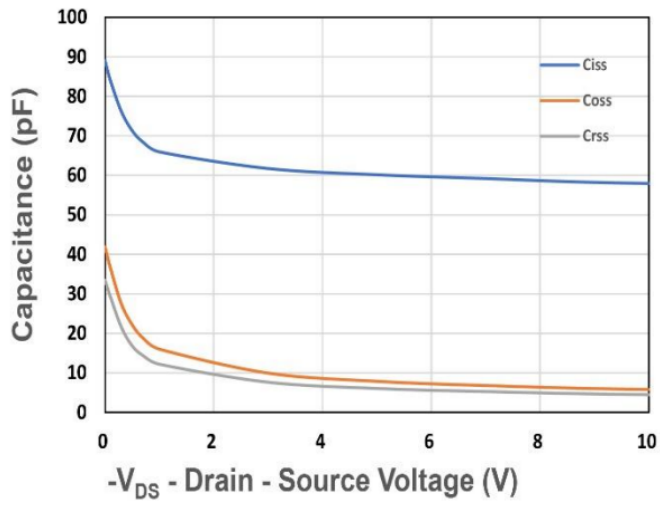


Figure 7. Capacitance

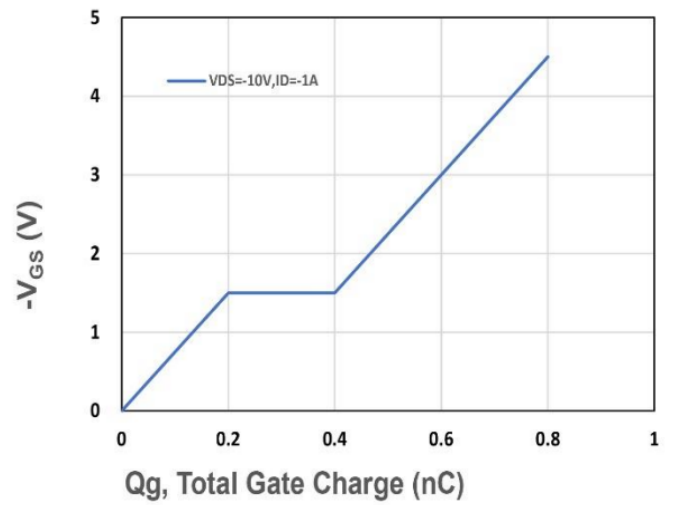
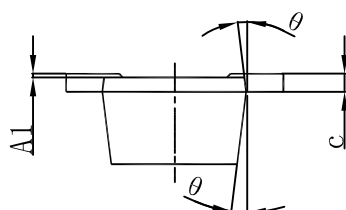
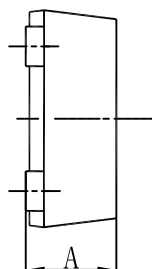
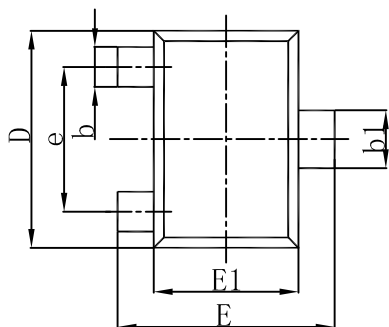


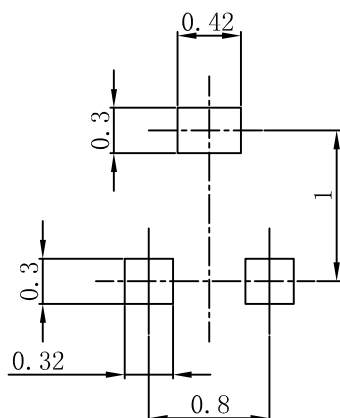
Figure 8. Gate Charge Characteristics

SOT-723 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.430	0.500	0.017	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

SOT-723 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.