

Features

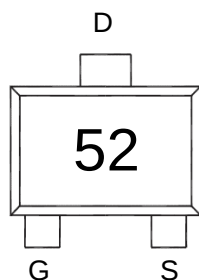
- Advanced trench cell design
- High speed switch
- Low Gate Charge

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
-50V	4.2Ω@-10V	-0.13A
	4.5Ω@-4.5V	

Application

- Portable appliances
- Video monitor

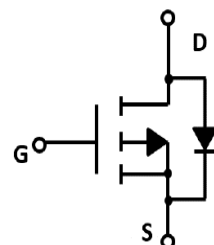


52: Device code

Marking and pin assignment



SOT-723 top view



Schematic diagram



Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit
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Common Ratings (TC=25°C Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage	-50	V
V_{GS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$ -0.13	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}C$ -0.52	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$ -0.13	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$ 0.225	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	556	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS502M	SOT-723	52	8,000	120,000	480,000	7"reel

Electrical Characteristics (TJ=25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-50	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-50V, V _{GS} =0V	--	--	-1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.4	-2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-0.13A	--	4.2	8.0	Ω
		V _{GS} =-4.5V, I _D =-0.1A	--	4.5	10	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	--	43	--	pF
C _{OSS}	Output Capacitance		--	2.9	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	1.8	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DD} =-30V, I _D =-0.15A, V _{GS} =-4.5V	--	1.77	--	nC
Q _{gs}	Gate Source Charge		--	0.57	--	nC
Q _{gd}	Gate Drain Charge		--	0.18	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =-30V, I _D =-0.15A, V _{GS} =-4.5V, R _G =2.5Ω	--	8.6	--	nS
t _r	Turn-on Rise Time		--	20	--	nS
t _{d(off)}	Turn-Off Delay Time		--	15	--	nS
t _f	Turn-Off Fall Time		--	77	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=-0.13A	--	--	-1.2	V

Typical Operating Characteristics

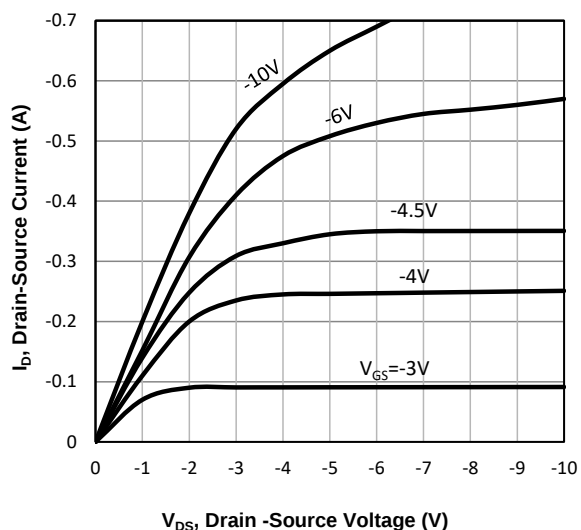


Fig1. Typical Output Characteristics

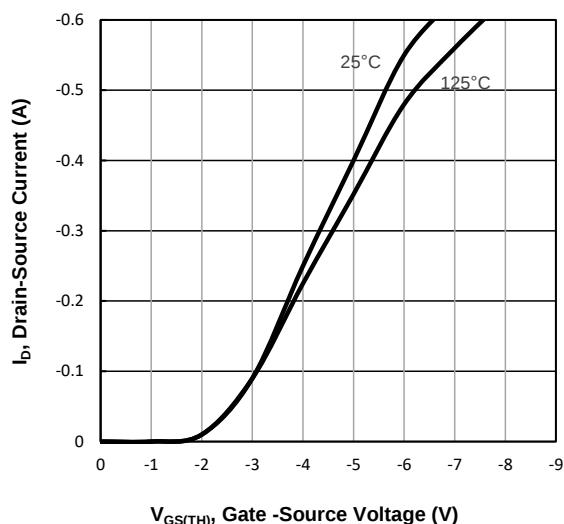


Fig2. Typical Transfer Characteristics

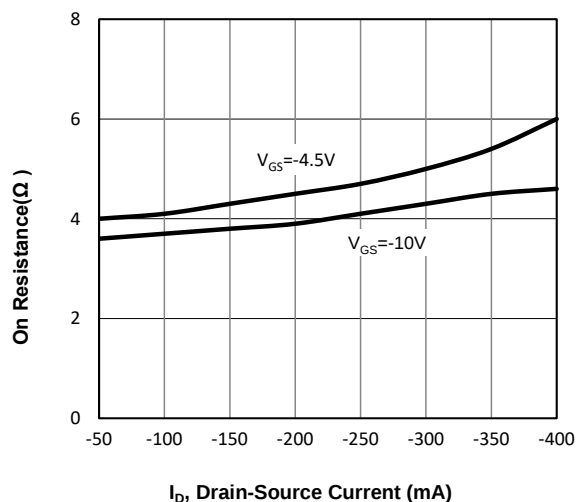


Fig3. Drain-Source on Resistance

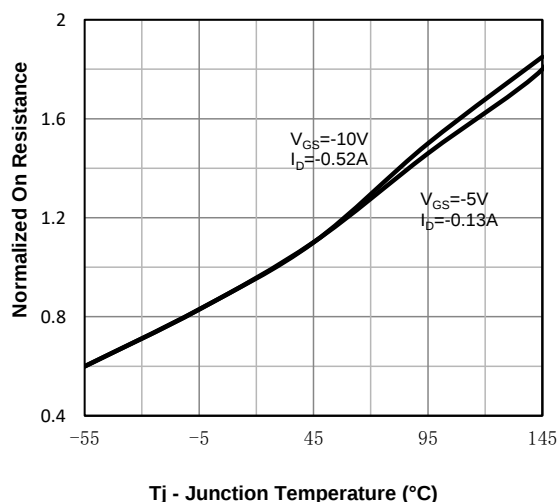


Fig4. Normalized On-Resistance Vs. Temperature

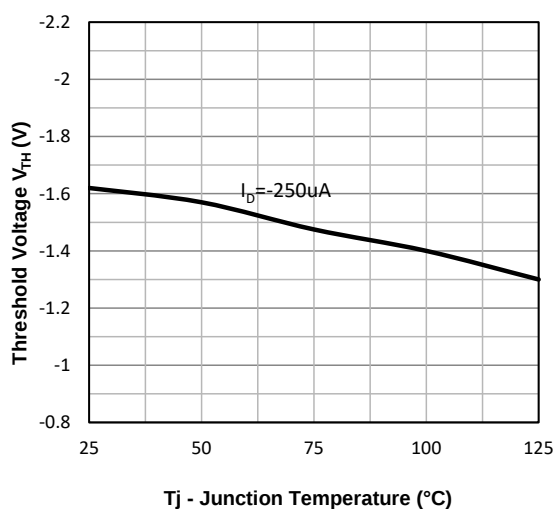


Fig5. Gate Threshold vs. Junction Temperature

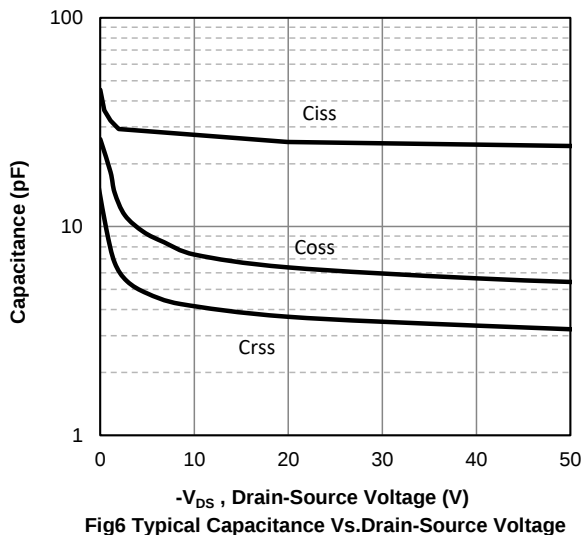
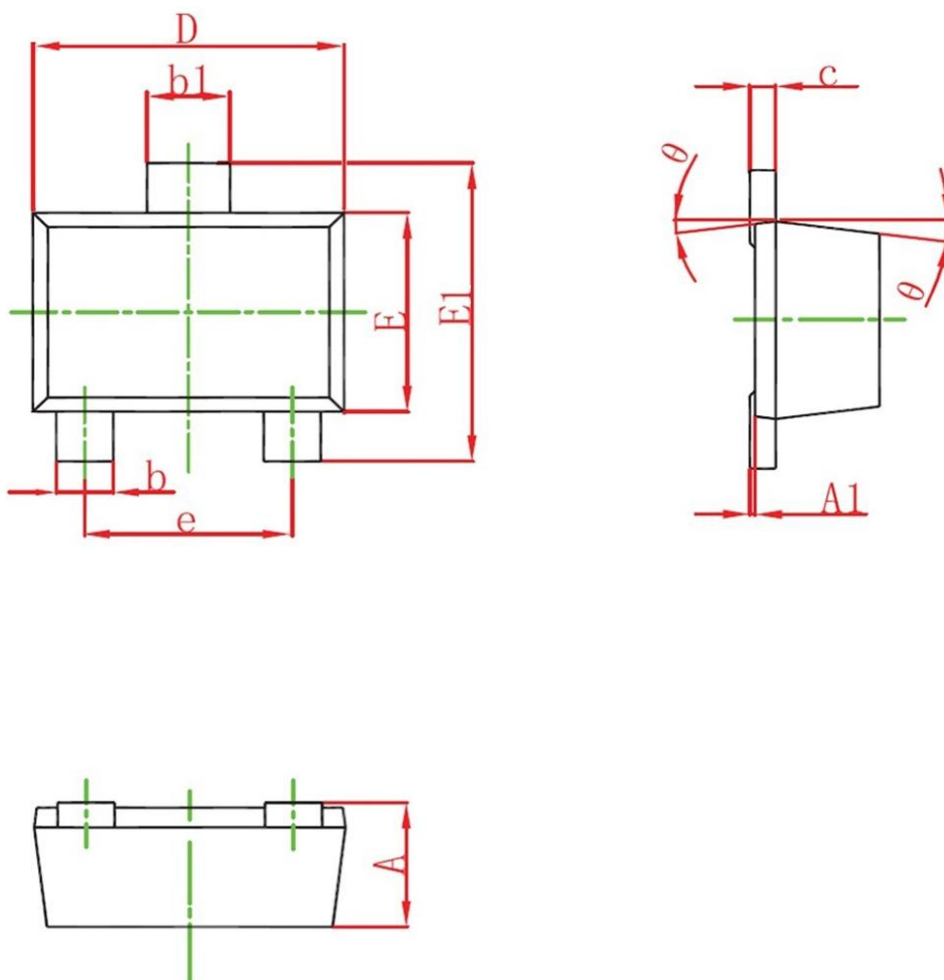


Fig6. Typical Capacitance Vs. Drain-Source Voltage

SOT-723 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.320	0.400	0.012	0.016
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.006	0.010
b1	0.270	0.370	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.046	0.050
E	0.750	0.850	0.030	0.034
E1	1.150	1.250	0.046	0.050
e	0.800TYP		0.020TYP	
θ	7°REF		7°REF	