

Features

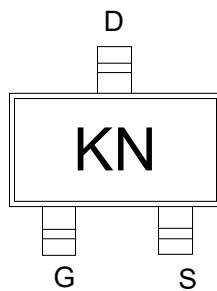
- Low on-resistance
- Fast switching speed
- Easily designed drive circuits
- Easy to parallel Portable equipment

Application

- Interfacing, Switching

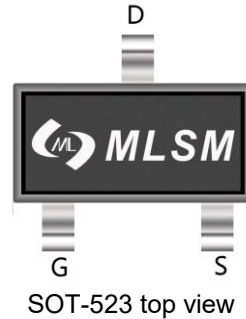
Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
50V	1.6Ω@10V	0.2A
	2.0Ω@4.5V	

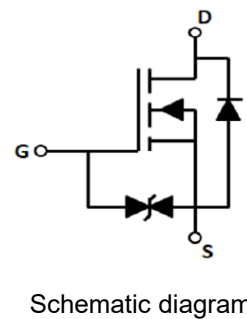


KN : Device code

Marking and pin assignment



SOT-523 top view



Schematic diagram



Pb-Free



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 155	°C
I_S	Diode Continuous Forward Current	$T_c=25^\circ\text{C}$ 0.2	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ 0.9	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 0.2	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 0.2	W
ESD	Gate-Source ESD Rating (HBM, Method 3015)	2500	V

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BSS138KT	SOT-523	KN	3,000	45,000	180,000	7"reel

Electrical Characteristics (T_J=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	VGS=0V, ID=250μA	50	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=50V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±10	μA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	0.8	1.1	1.5	V
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=0.3A	--	1.6	5	Ω
		VGS=4.5V, ID=0.15A	--	2.0	6	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	VDS=25V, VGS=0V, f=1MHz	--	29	--	pF
Coss	Output Capacitance		--	4.3	--	pF
Crss	Reverse Transfer Capacitance		--	3	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=25V, ID=0.2A, VGS=10V	--	1.2	--	nC
Qgs	Gate Source Charge		--	0.15	--	nC
Qgd	Gate Drain Charge		--	0.31	--	nC
td(on)	Turn-on Delay Time	VDD=25V, ID=0.2A, VGS=10V, RG=25Ω	--	3.6	--	nS
tr	Turn-on Rise Time		--	23.2	--	nS
td(off)	Turn-Off Delay Time		--	5.5	--	nS
tf	Turn-Off Fall Time		--	23.3	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	Tj=25°C, Is=0.2A	--	--	1.2	V

Typical Operating Characteristics

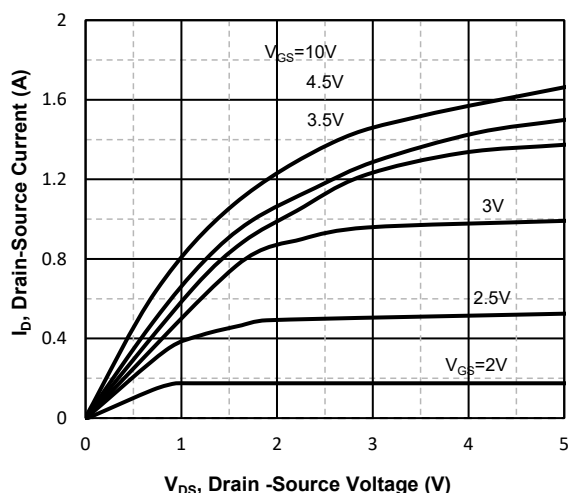


Fig1. Typical Output Characteristics

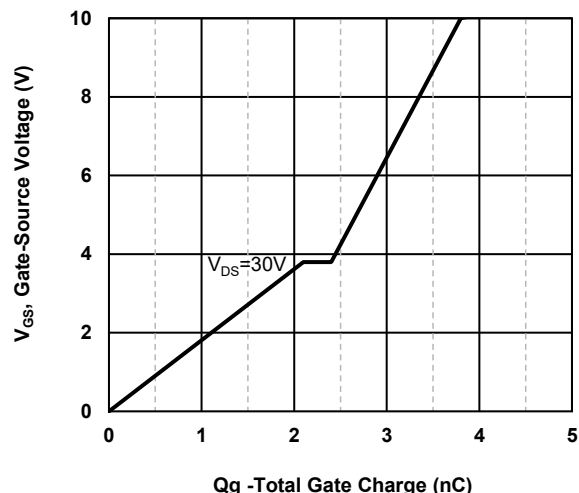


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

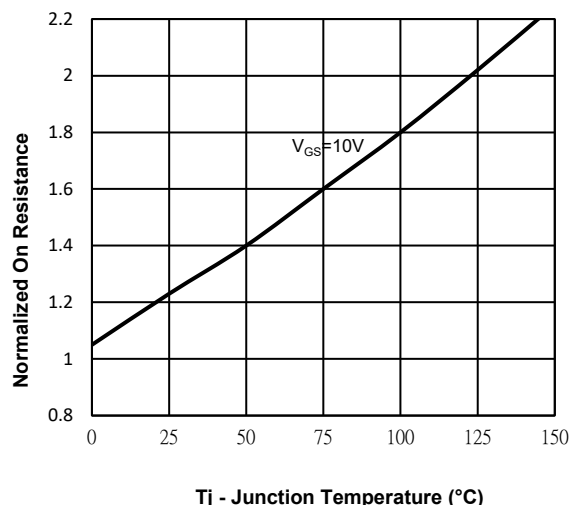


Fig3. Normalized On-Resistance Vs. Temperature

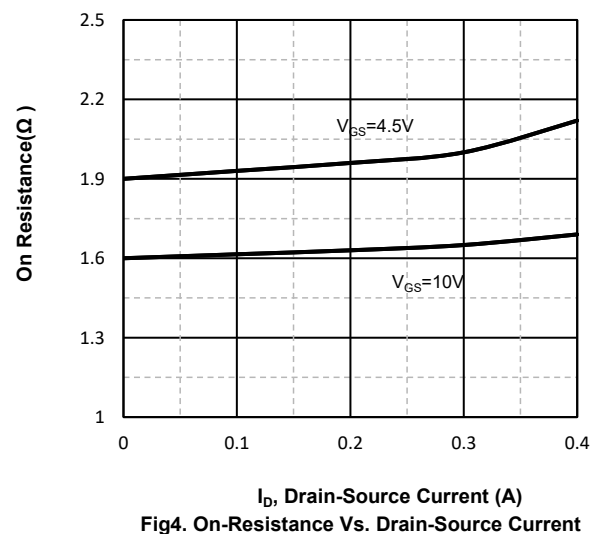


Fig4. On-Resistance Vs. Drain-Source Current

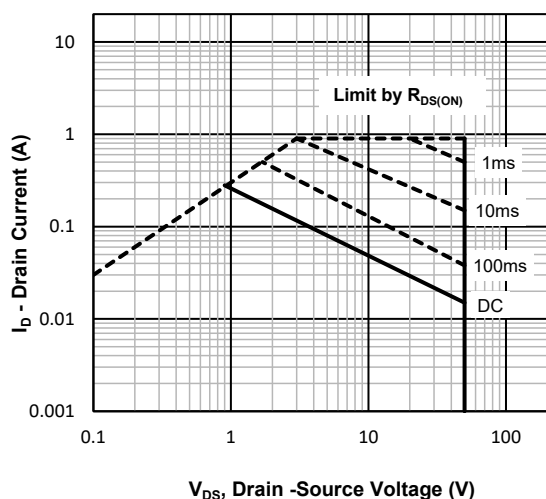


Fig5. Maximum Safe Operating Area

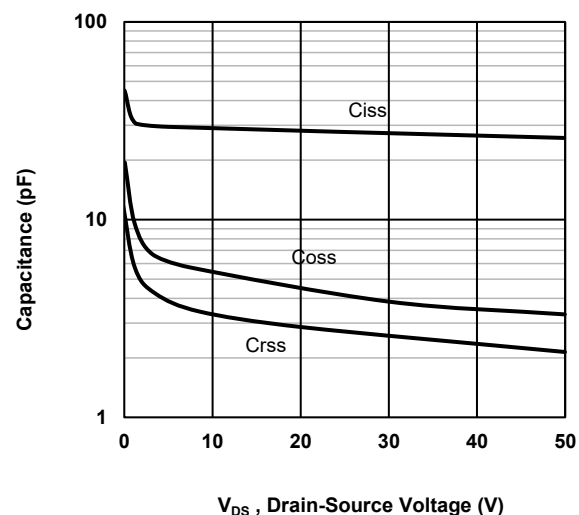
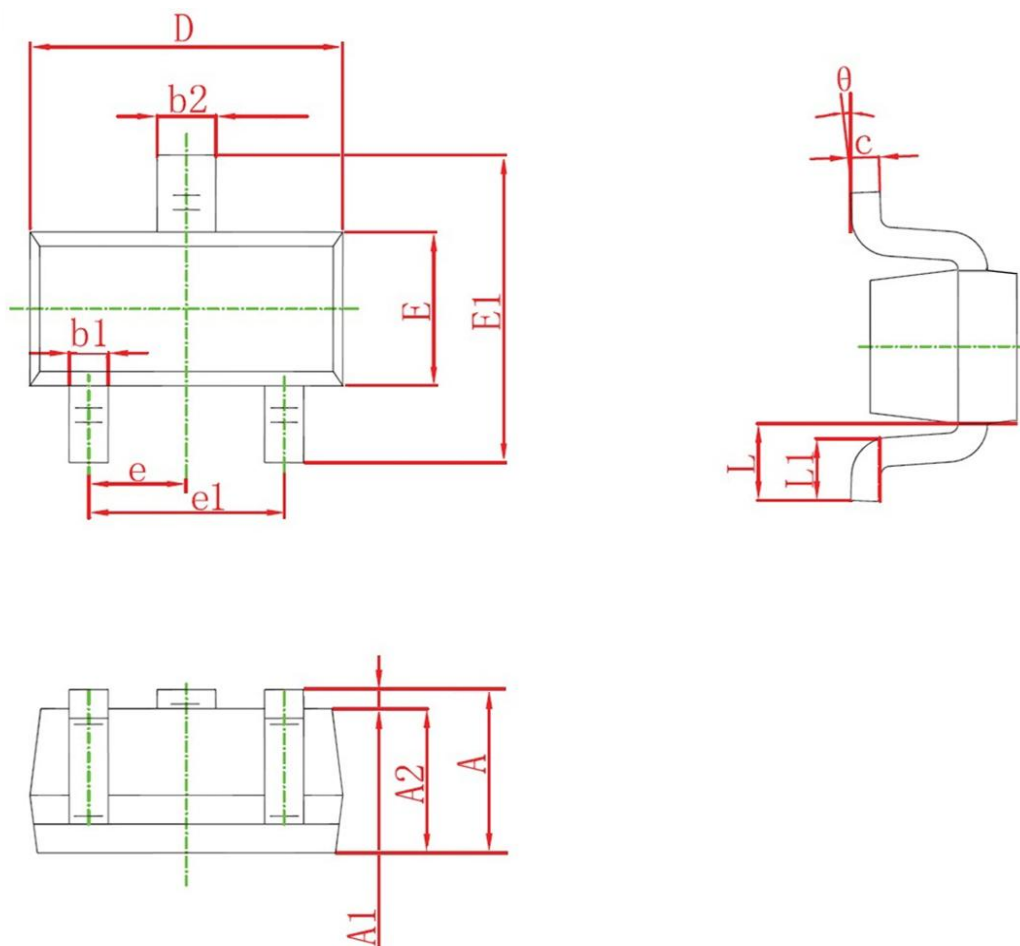


Fig6. Typical Capacitance Vs. Drain-Source Voltage

SOT-523 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°