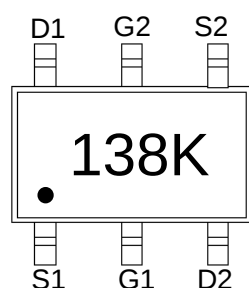


Features

- High density cell design for Low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

Application

- Load Switch for Portable Devices
- DC/DC Converter

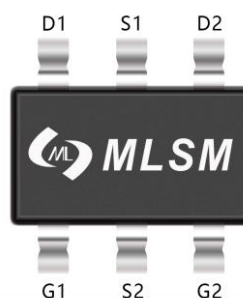


138K: Device code
 Solid dot = Pin1 indicator

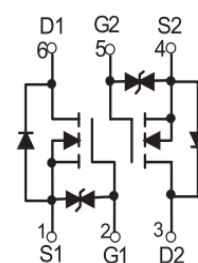
Marking and pin assignment

Product Summary

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



SOT-363 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	-55 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	$T_C=25^\circ\text{C}$ 0.15	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	833	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
BSS138KDW	SOT-363	138K	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	V _{GS} =0V, I _D =250μA	50	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.6	1.0	1.5	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =0.3A	--	1.6	5.0	Ω
		V _{GS} =4.5V, I _D =0.2A	--	2.0	6.0	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	--	29	--	pF
C _{OSS}	Output Capacitance		--	4.3	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	3	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =25V, I _D =0.5A, V _{GS} =10V	--	1.2	--	nC
Q _{gs}	Gate Source Charge		--	0.15	--	nC
Q _{gd}	Gate Drain Charge		--	0.31	--	nC
Q _{rr}	Reverse Recovery Charge	I _F =0.5A, di/dt=100A/us	--	2.1	--	nC
t _{rr}	Reverse Recovery Time		--	9.2	--	nS
t _{d(on)}	Turn-on Delay Time	V _{DD} =25V, I _D =0.5A, V _{GS} =10V, R _G =25Ω	--	3.6	--	nS
t _r	Turn-on Rise Time		--	23.2	--	nS
t _{d(off)}	Turn-Off Delay Time		--	5.5	--	nS
t _f	Turn-Off Fall Time		--	23.3	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=0.2A	--	--	1.2	V

Typical Operating Characteristics

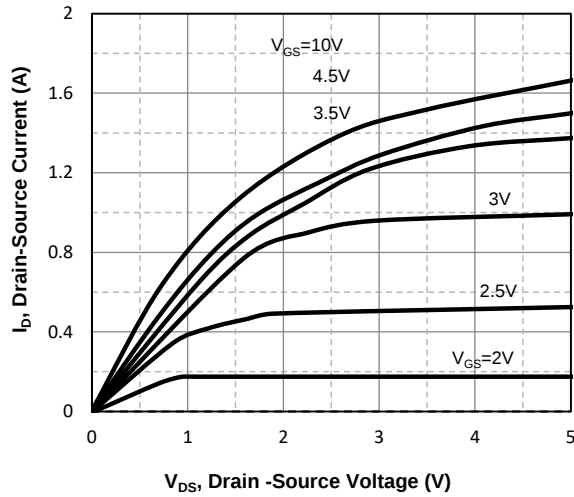


Fig1. Typical Output Characteristics

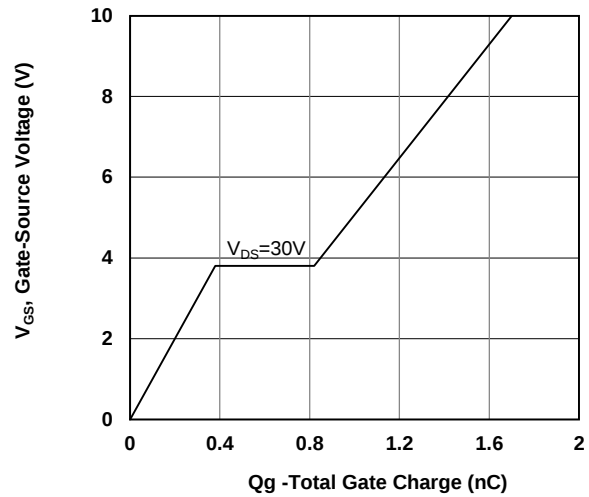


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

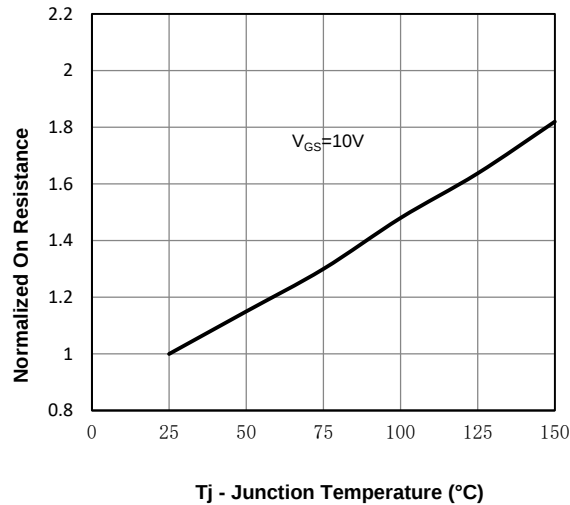


Fig3. Normalized On-Resistance Vs. Temperature

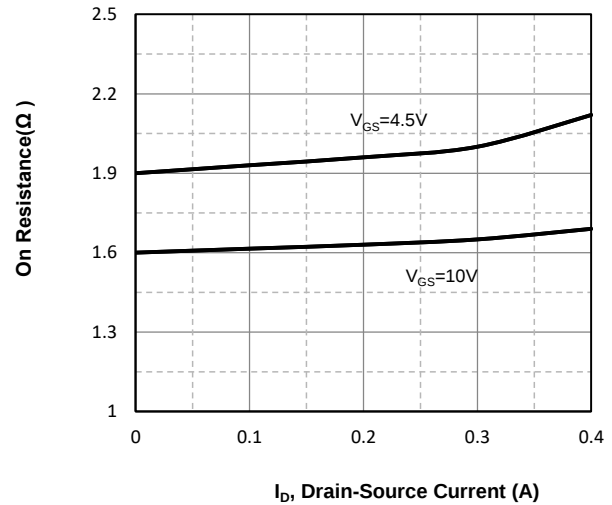


Fig4. On-Resistance Vs. Drain-Source Current

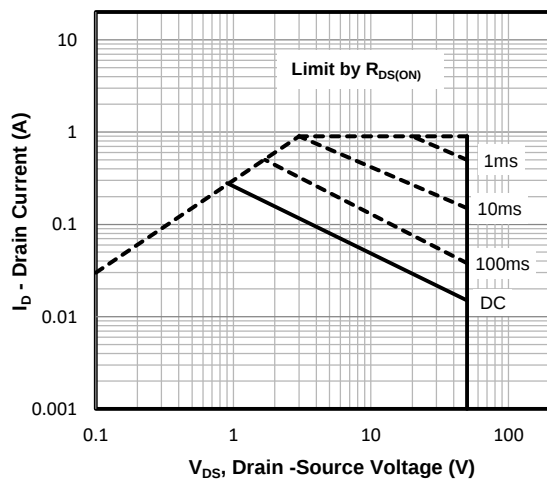


Fig5. Maximum Safe Operating Area

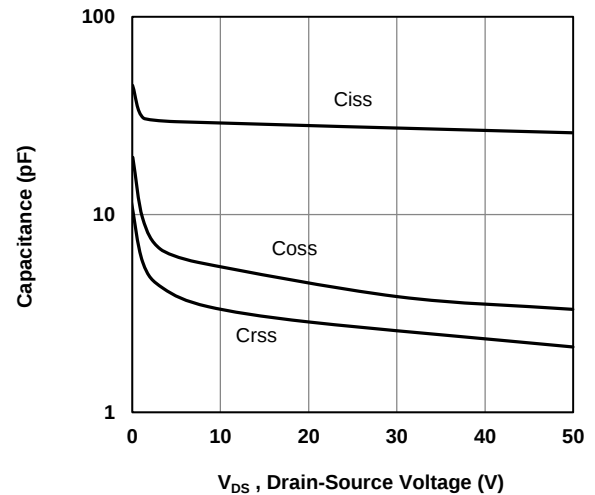
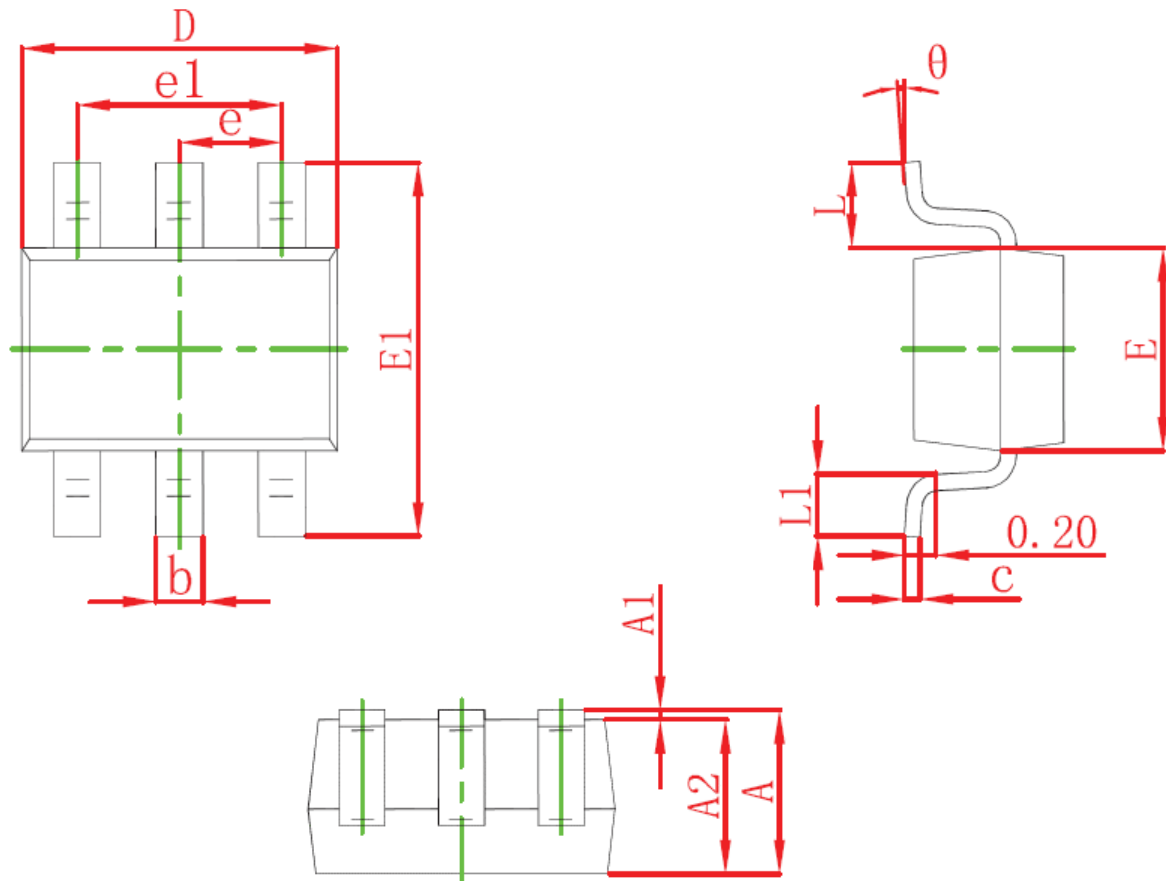


Fig6. Typical Capacitance Vs. Drain-Source Voltage

SOT-363 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650TYP		0.026TYP	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.021REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°