P-Channel Enhancement Mode MOSFET

1 Features

- V_{DS} = -20V, I_D = -0.5A
- $R_{DS(ON)}$ = 650mΩ @ V_{GS} = -4.5V
- $R_{DS(ON)}$ = 900mΩ @ V_{GS} = -2.5V
- $R_{DS(ON)}$ = 1400mΩ @ V_{GS} = -1.8V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

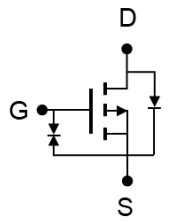
2 Applications

- PWM applications
- Load switch
- Power management

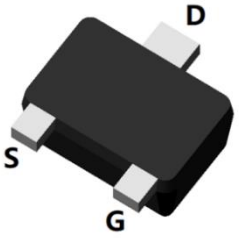
3 Description

The SLMT720V1CP provide the best combination of fast switching, low on-resistance and cost-effectiveness. The MOSFET uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as -0.7V. This device is suitable for use as a load switch or in high power applications. With the function of ESD （2000V）.

4 Pin Configuration and Top View



Schematic Diagram



Bottom View

SOT-723

5 Device Information

PART NUMBER	Marking	PACKAGE	BODY SIZE (NOM)
SLMT720V1CP	P3	SOT-723	1.20 mm x 1.20mm

6 Absolute maximum Ratings @25℃

RATING	SYMBOL	VALUE	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-0.5	A
Pulsed Drain Current	I_{DP}	-2.5	A
Total power dissipation	P_D	280	mW
Channel temperature	T_J	150	℃
Range of storage temperature	T_{STG}	-55 to +150	℃
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	445	℃/W

7 Electrical characteristics (@25℃ unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = -250μA, V_{GS} = 0V	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.35	-0.7	-1.1	V
Drain Cut Off Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±10	μA
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -0.5A		650	850	mΩ
		V_{GS} = -2.5V, I_D= -0.3A		900	1200	mΩ
		V_{GS} = -1.8V, I_D= -0.2A		1400	2000	mΩ
Dynamic Characteristics						
Total Gate Charge	Q_G	V_{DS} = -10V,		1.24		nC
Gate-Source Charge	Q_{GS}	I_D = -0.5A,		0.35		nC
Gate-Drain Charge	Q_{GD}	V_{GS} = -4.5V		0.27		nC
Input Capacitance	C_{ISS}	V_{DS} = -10V,		41		pF
Reverse Transfer Capacitance	C_{RSS}	V_{GS} = 0V,		15		pF
Output Capacitance	C_{OSS}	f = 1.0MHz		12		pF
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = -4.5V, V_{DS} = -10V I_D=0.5A , R_G =3Ω		4		ns
Turn-Off Delay Time	$t_{d(off)}$			16		ns
Rise Time	t_r			19		ns
Fall Time	t_f			25		ns
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = -0.7A, V_{GS} = 0V		-0.95	-1.2	V

8 Typical Characteristics

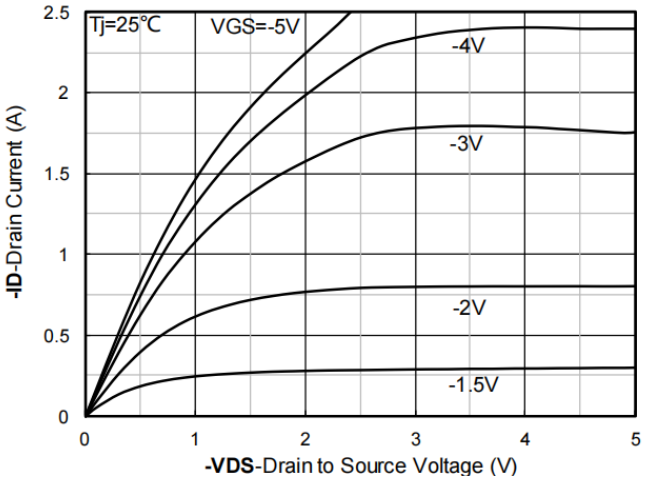


Figure 1. Output Characteristics

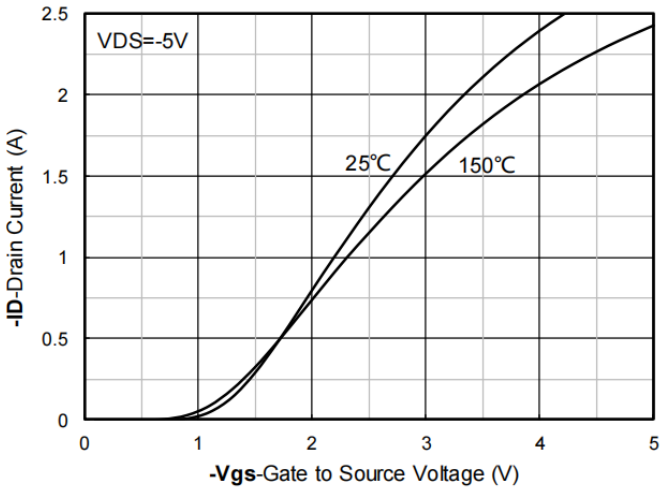


Figure 2. Transfer Characteristics

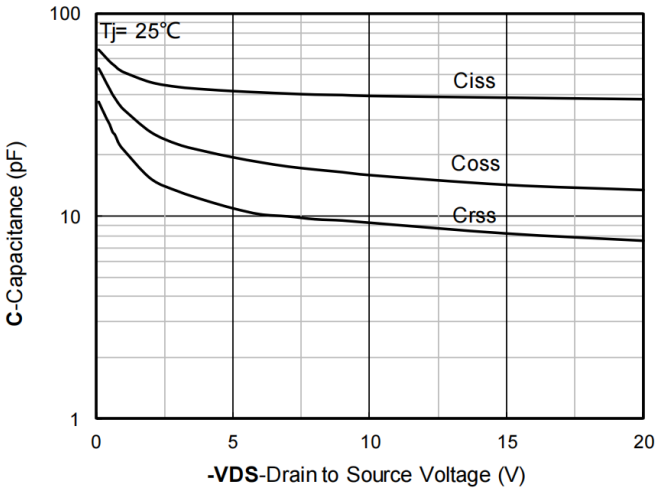


Figure 3. Capacitance Characteristics

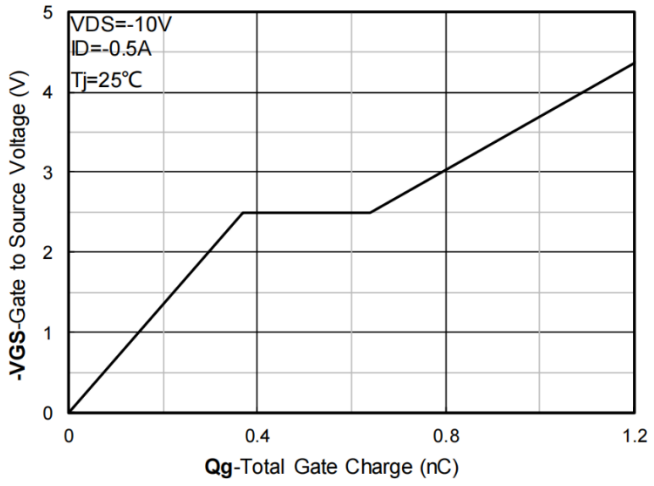


Figure 4. Gate Charge

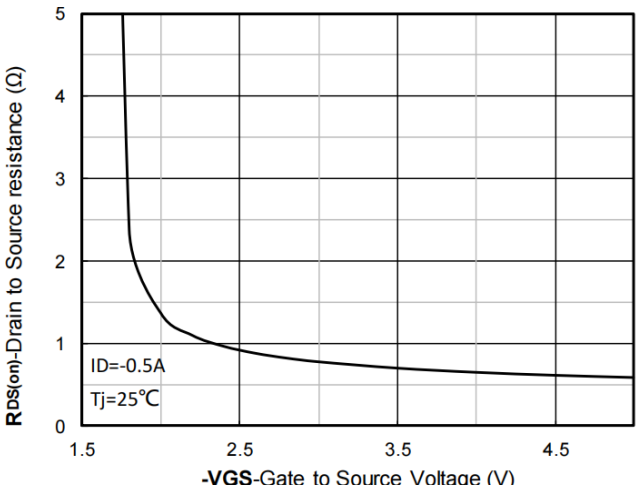


Figure 5. On-Resistance vs Gate to Source Voltage

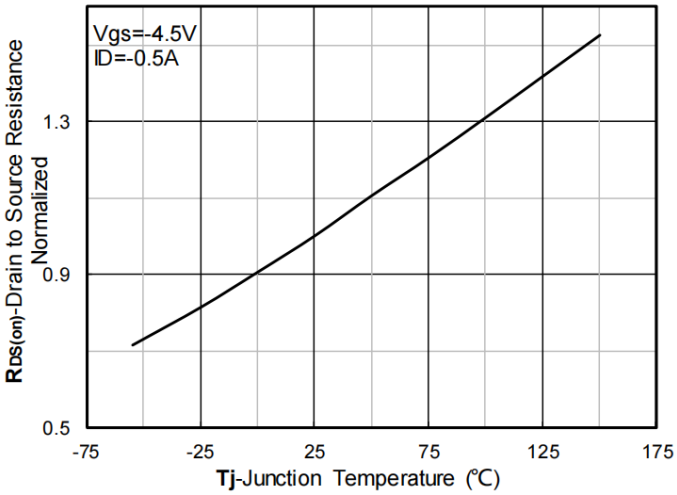


Figure 6. Normalized On-Resistance

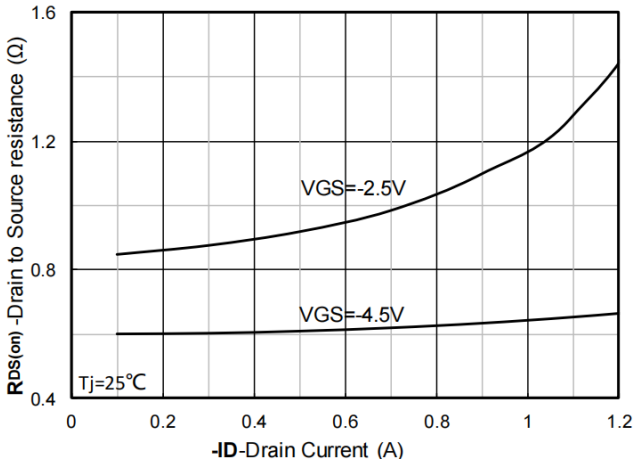


Figure 7. $R_{DS(on)}$ VS Drain Current

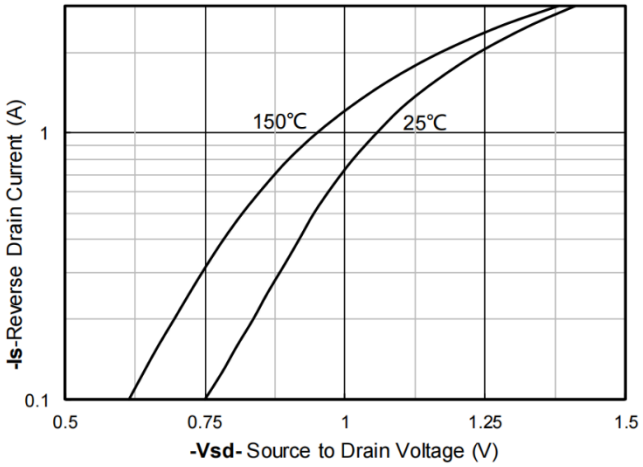


Figure 8. Forward characteristics of reverse diode

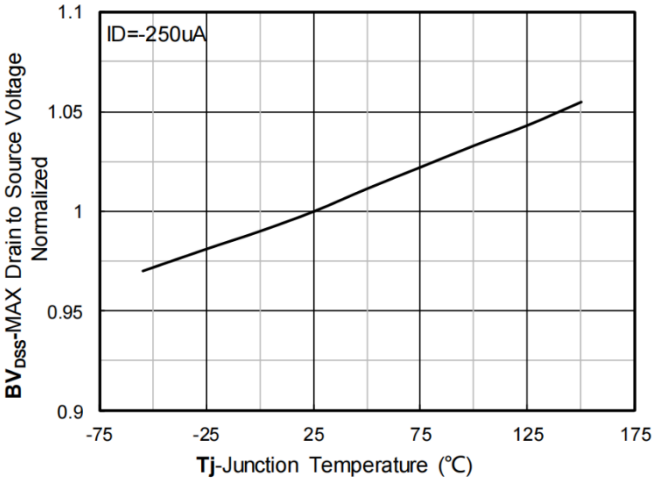


Figure 9. Normalized breakdown voltage

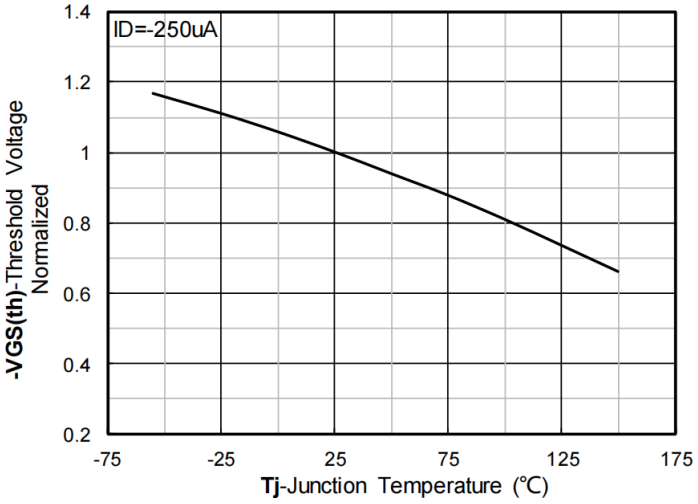


Figure 10. Normalized Threshold voltage

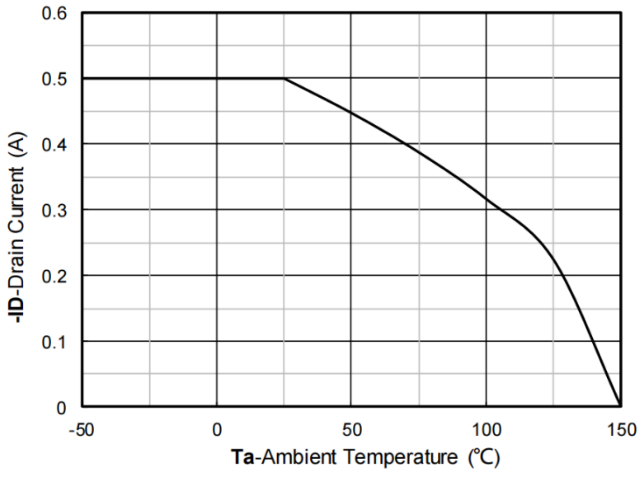


Figure 11. Current dissipation

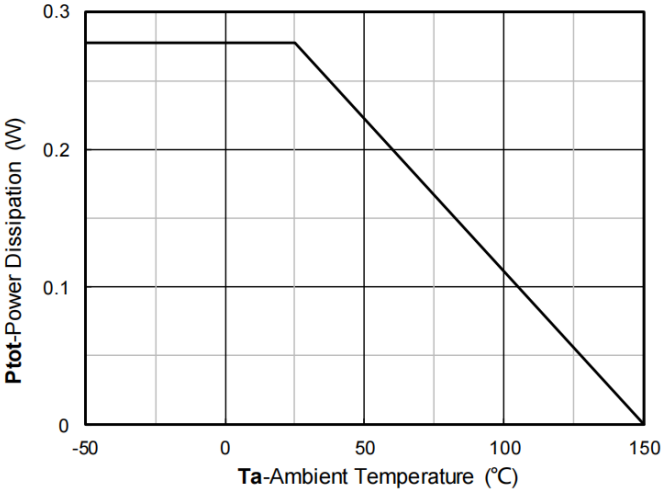


Figure 12. Power dissipation

9 Product dimension

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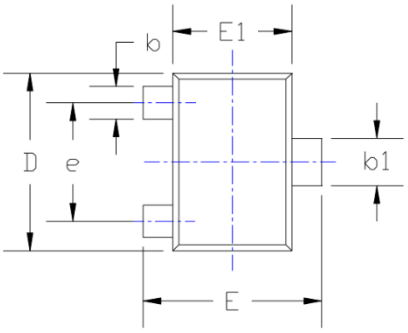
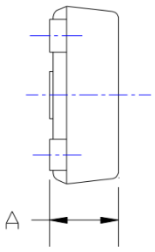
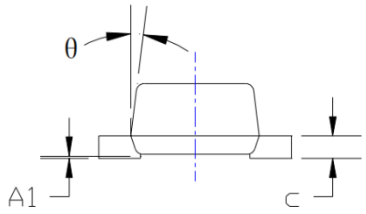


TOP VIEW



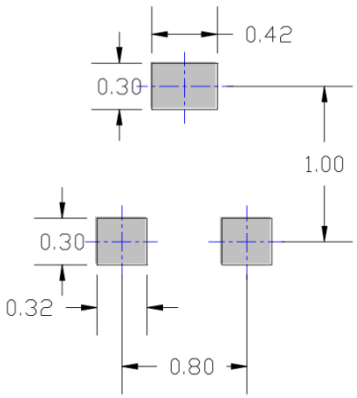
SIDE VIEW

DIM	UNITS (mm)		
	MIN.	TYP.	MAX.
D	1.15	1.20	1.25
E	1.15	1.20	1.25
A	0.43	-	0.55
A1	0.00	-	0.05
b	0.17	-	0.27
b1	0.27	-	0.37
C	0.08	0.14	0.20
E1	0.75	0.80	0.85
e	-	0.80	-
Θ	-	7°REF	-



SIDE VIEW

10 PCB Layout Footprints (Units: mm)



11 Ordering Information

Part Number	Packaging	Reel Size
SLMT720V1CP	8000/Tape & Reel	7 inch