

P-Channel Enhancement Mode MOSFET

1 Features

- $V_{DS} = -20V$, $I_D = -0.65A$
- $R_{DS(ON)} = 580m\Omega$ @ $V_{GS} = -4.5V$
- $R_{DS(ON)} = 850m\Omega$ @ $V_{GS} = -2.5V$
- $R_{DS(ON)} = 1300m\Omega$ @ $V_{GS} = -1.8V$
- High Power and current handing capability
- ESD Protected Up to 2.0KV (HBM)
- Package SOT-523

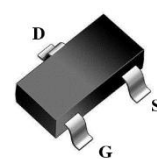
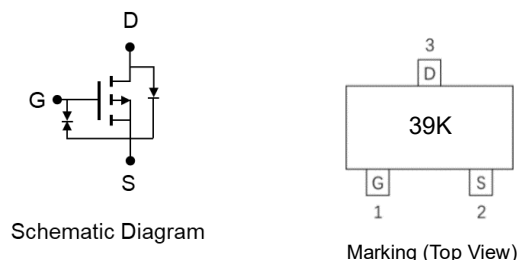
2 Applications

- PWM applications
- Load switch
- Power management

3 Description

The SLMT520V1CP 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 -0.65V. This device is suitable for use as a load switch or in high power applications.

4 Pin Configuration and Marking



SOT-523

5 Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
SLMT520V1CP	SOT-523	1.60 mm x 1.60mm

6 Absolute maximum Ratings @25°C

RATING	SYMBOL	VALUE	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-0.65	A
Pulsed Drain Current	I_{DP}	-2.6	A
Total power dissipation	P_D	280	mW
Channel temperature	T_J	150	°C
Range of storage temperature	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	445	°C/W

7 Electrical characteristics (@25°C 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	-0.65	-1.2	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		580	850	mΩ
		V _{GS} = -2.5V, I _D = -0.3A		850	1200	mΩ
		V _{GS} = -1.8V, I _D = -0.2A		1300	1950	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _G	V _{DS} = -10V, I _D = -0.5A, V _{GS} = -4.5V		1.24		nC
Gate-Source Charge	Q _{GS}			0.37		nC
Gate-Drain Charge	Q _{GD}			0.27		nC
Input Capacitance	C _{ISS}	V _{DS} = -10V, V _{GS} = 0V, f = 1.0MHz		71		pF
Reverse Transfer Capacitance	C _{RSS}			15		pF
Output Capacitance	C _{OSS}			20		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 = -0.65A, V _{GS} = 0V		-0.8	-1.2	V

8 Typical Characteristics

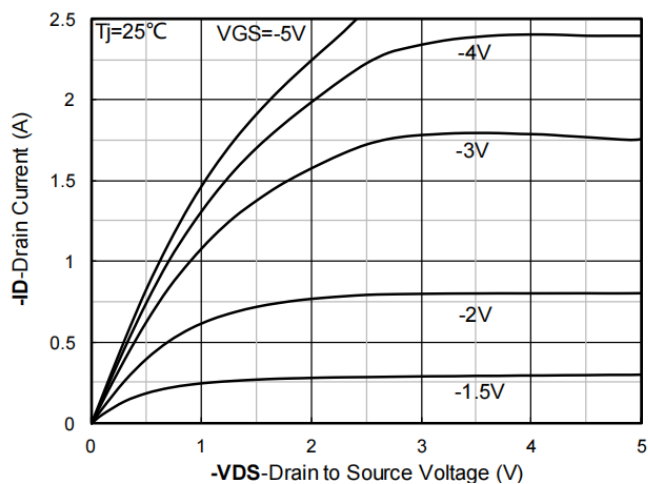


Fig 1. Output Characteristics

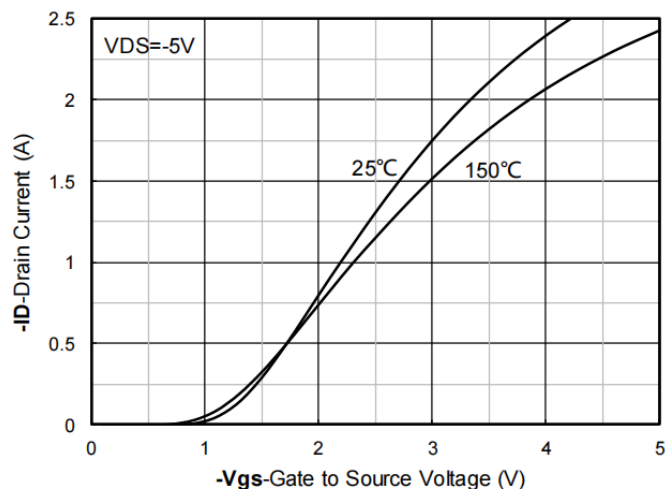


Fig 2. Transfer Characteristics

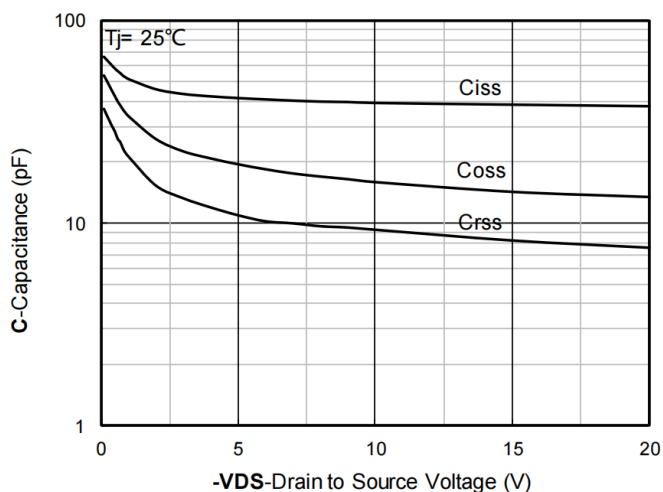


Fig 3. Capacitance Characteristics

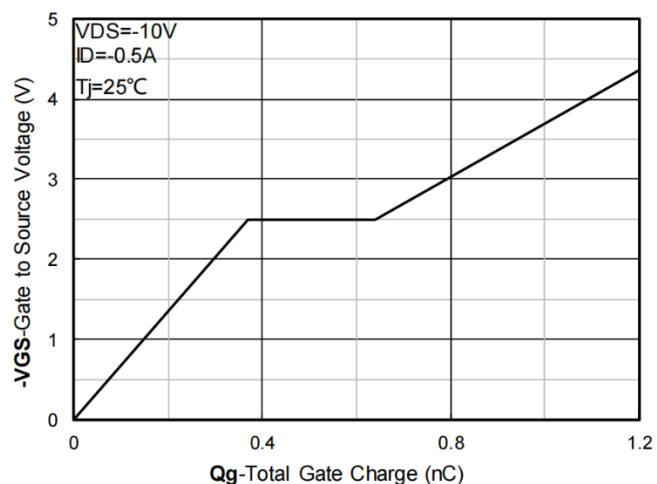


Fig 4. Gate Charge

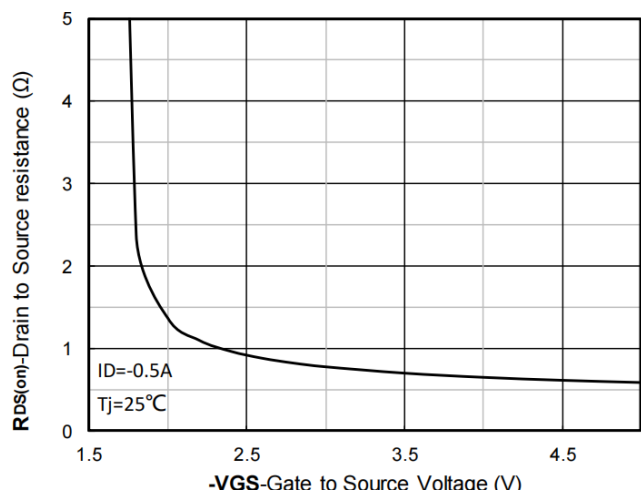


Fig 5. On-Resistance vs Gate to Source Voltage

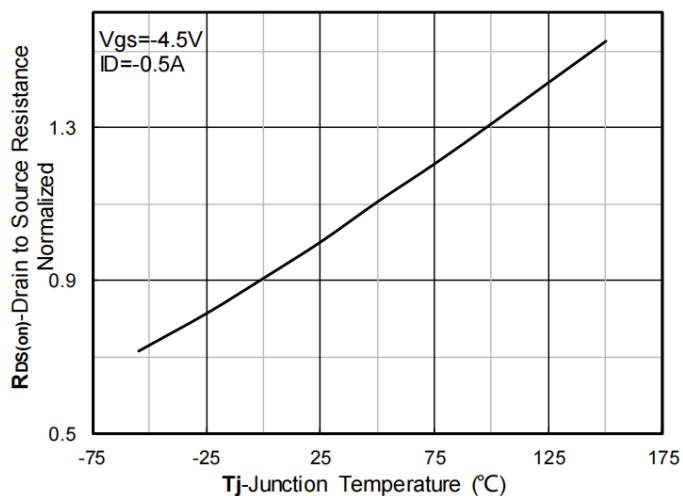


Fig 6. Normalized On-Resistance

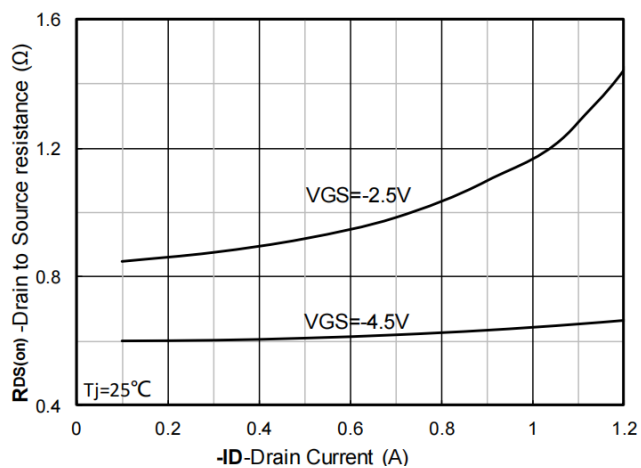


Fig 7. $R_{DS(on)}$ VS Drain Current

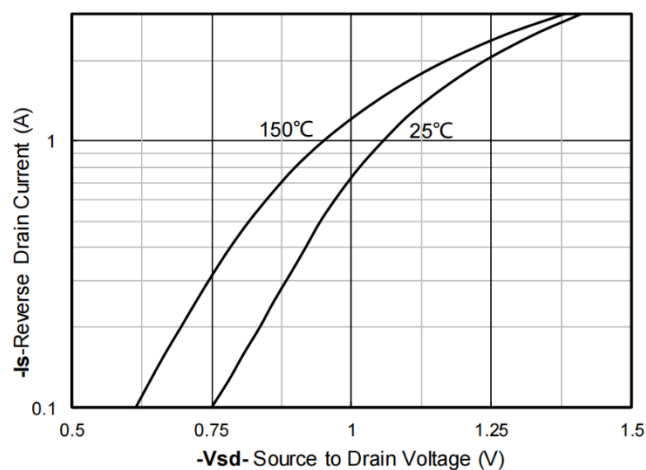


Fig 8. Forward characteristics of reverse diode

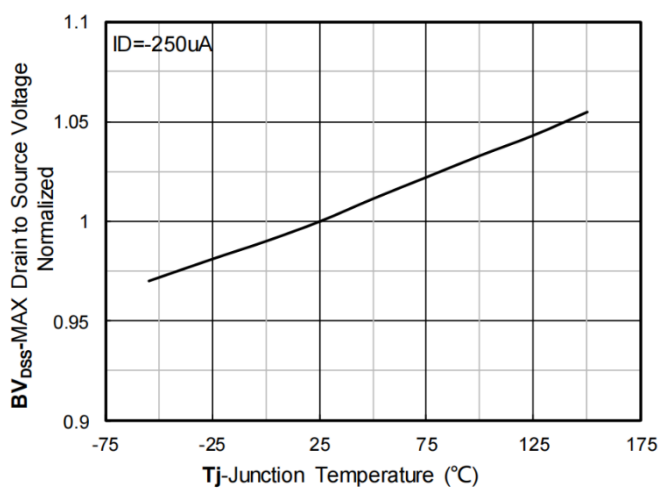


Fig 9. Normalized breakdown voltage

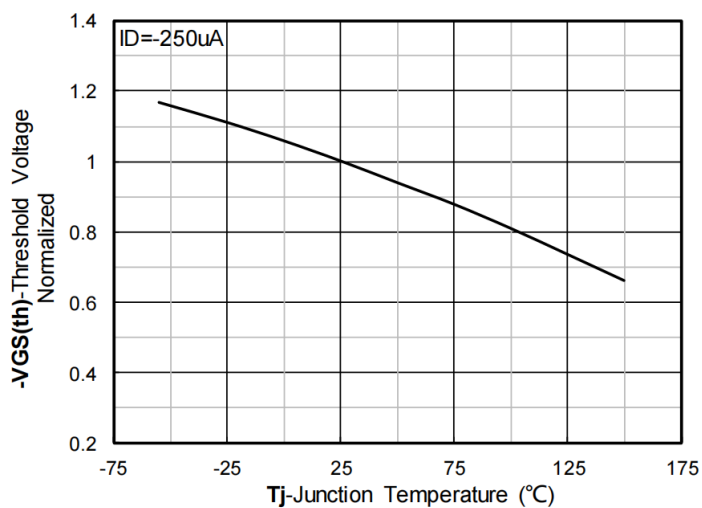
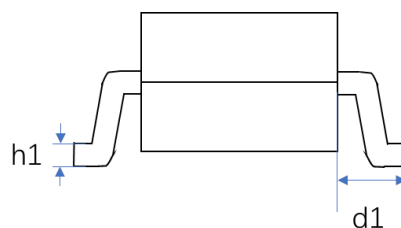
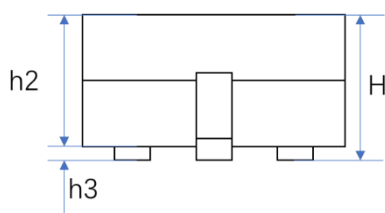


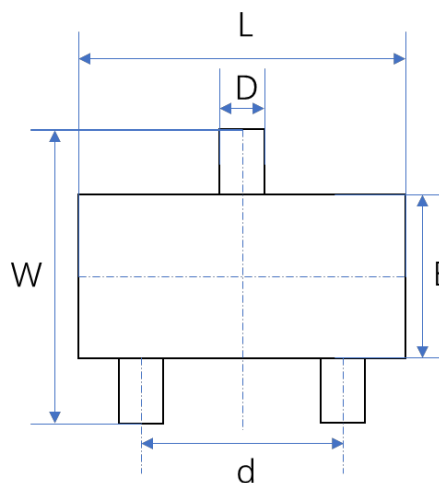
Fig 10. Normalized Threshold voltage

9 Product dimension

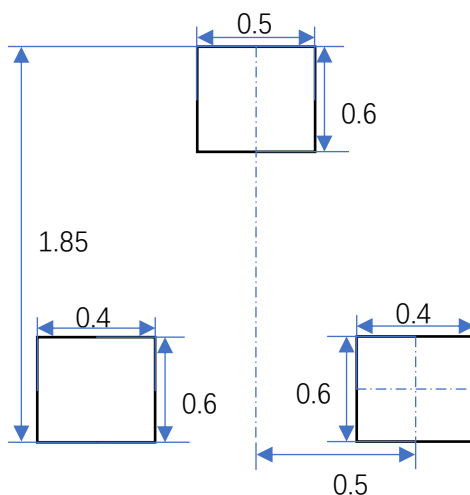
SOT-523



DIM	UNITS (mm)		
	MIN.	TYP.	MAX.
L	1.50	1.60	1.70
W	1.45	1.60	1.75
H	0.70	0.80	0.90
D	0.25	-	0.35
h1	0.10	0.15	0.20
h2	0.70	0.75	0.80
h3	-	-	0.10
E	0.70	0.80	0.90
d	0.90	1.00	1.10
d1	-	0.40	-



10 PCB Layout Footprints (Units: mm)



11 Ordering Information

Part Number	Packaging	Reel Size
SLMT520V1CP	3000/Tape & Reel	7 inch