

N-Channel Enhancement Mode MOSFET

1 Features

- $V_{DS} = 20V$, $I_D = 0.75A$
- $R_{DS(ON)} = 200m\Omega$ @ $V_{GS} = 4.5V$
- $R_{DS(ON)} = 290m\Omega$ @ $V_{GS} = 2.5V$
- $R_{DS(ON)} = 480m\Omega$ @ $V_{GS} = 1.8V$
- High Power and current handling capability
- ESD Protected Up to 2.0KV (HBM)
- Package SOT-523

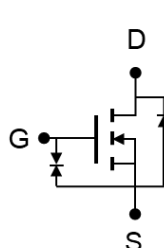
2 Applications

- PWM applications
- Load switch
- Power management

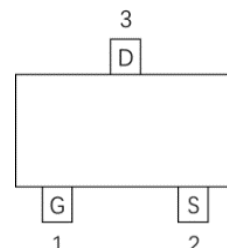
3 Description

The SLMT520V1CN 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 0.75V. This device is suitable for use as a load switch or in PWM applications.

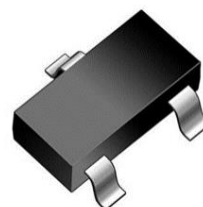
4 Pin Configuration and Top View



Schematic Diagram



Marking (Top View)



SOT-523

5 Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
SLMT520V1CN	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}	± 10	V
Continuous Drain Current	I_D	0.75	A
Pulsed Drain Current	I_{DP}	3	A
Total power dissipation	P_D	250	mW
Channel temperature	T_J	150	°C
Range of storage temperature	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	°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	0.75	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 = 0.7A		200	300	mΩ
		V _{GS} = 2.5V, I _D = 0.5A		290	400	mΩ
		V _{GS} = 1.8V, I _D = 0.2A		480	700	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _G	V _{DS} =4.5V, I _D =0.75A, V _{GS} = 10V		1.0		nC
Gate-Source Charge	Q _{GS}			0.28		nC
Gate-Drain Charge	Q _{GD}			0.22		nC
Input Capacitance	C _{ISS}	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz		56		pF
Reverse Transfer Capacitance	C _{RSS}			2.5		pF
Output Capacitance	C _{OSS}			20		pF
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V I _D =0.75A, R _{GEN} = 10Ω		2		ns
Turn-Off Delay Time	t _{d(off)}			10		ns
Rise Time	t _r			18.8		ns
Fall Time	t _f			23		ns
Gate Resistance	R _g	f=1 MHz		50		Ω
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 0.75A, V _{GS} = 0V		0.9	1.2	V

8 Typical Characteristics

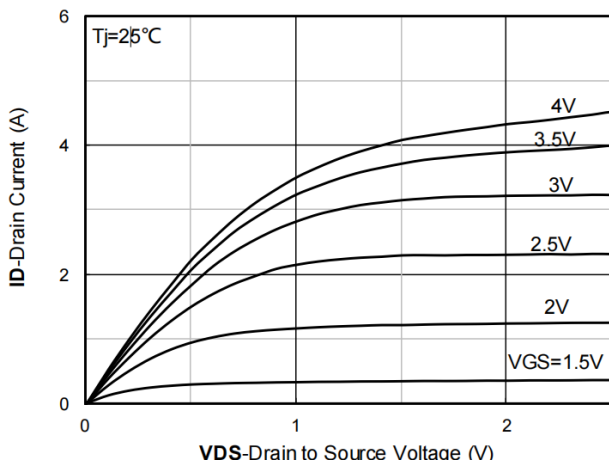


Fig 1: Output Characteristics

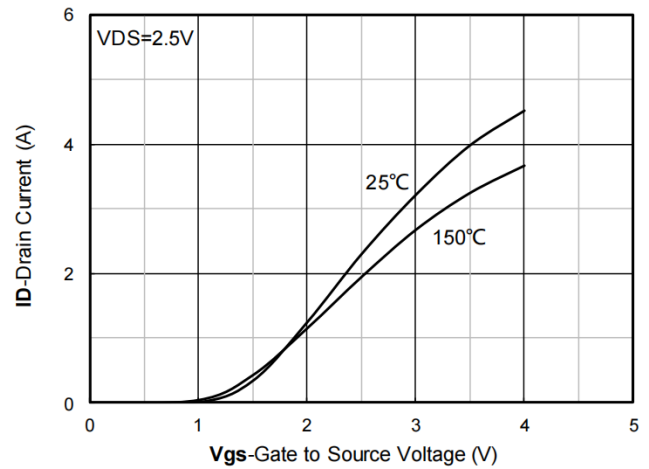


Fig 2: Transfer Characteristics

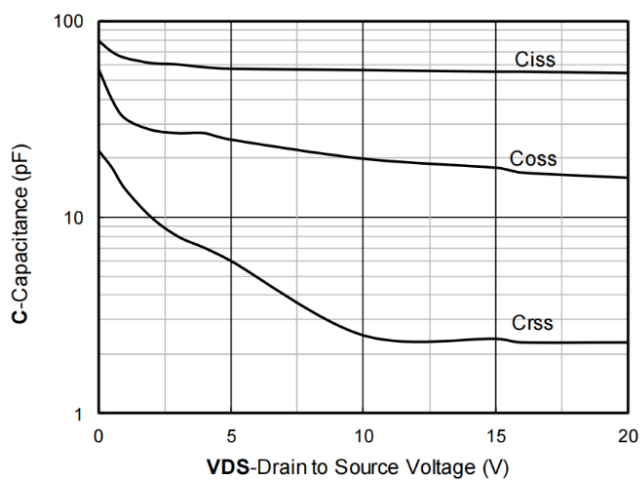


Fig 3: Capacitance Characteristics

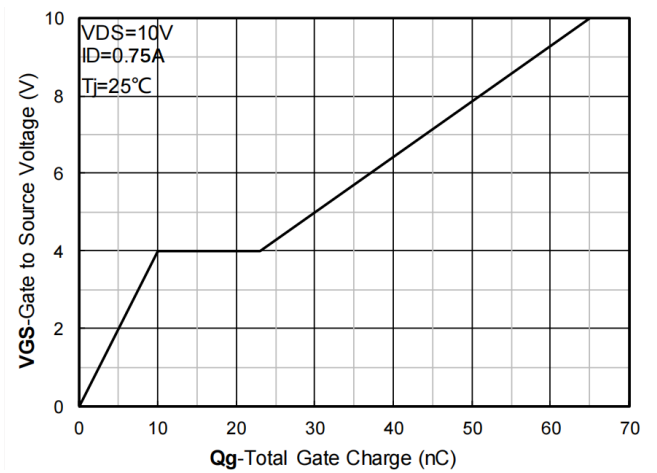


Fig 4: Gate Charge

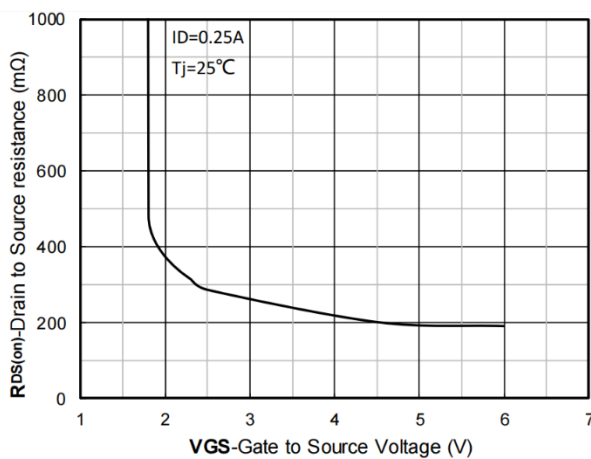


Fig 5: On-Resistance vs Gate to Source Voltage

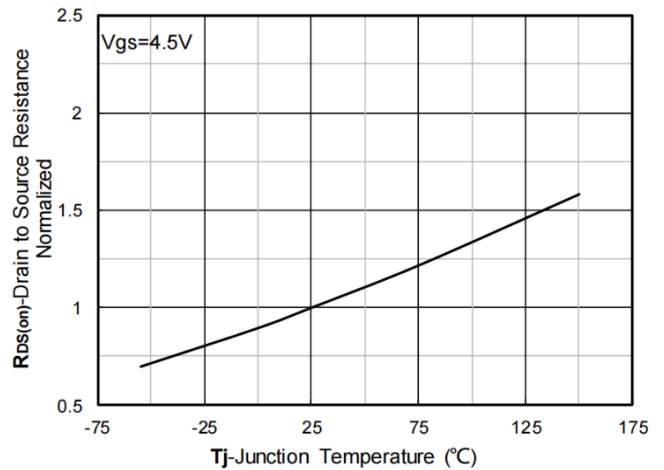


Fig 6: Normalized On-Resistance

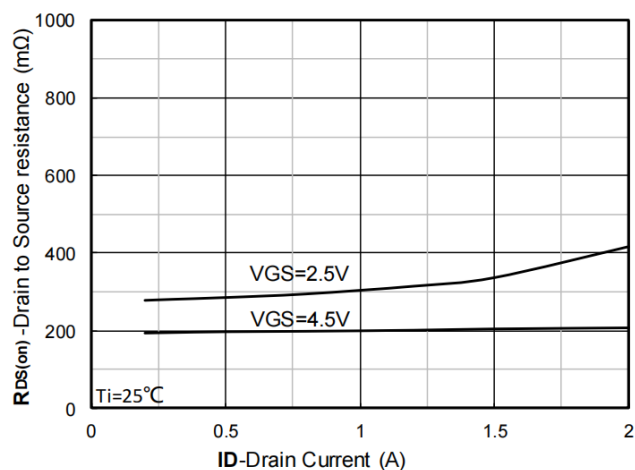


Fig 7: $R_{DS(on)}$ VS Drain Current

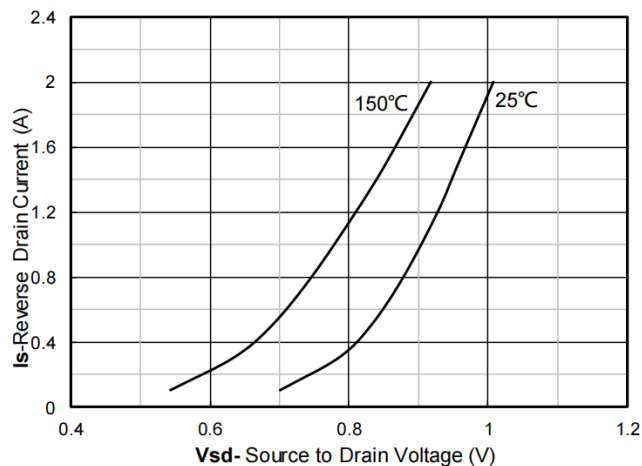


Fig 8: Forward characteristics of reverse diode

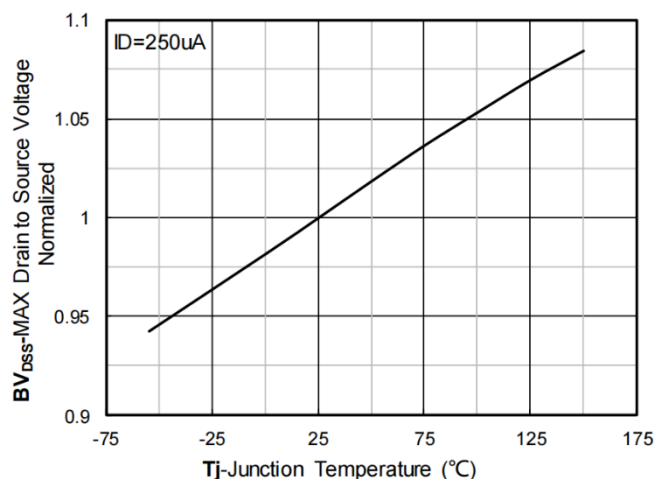


Fig 9: Normalized breakdown voltage

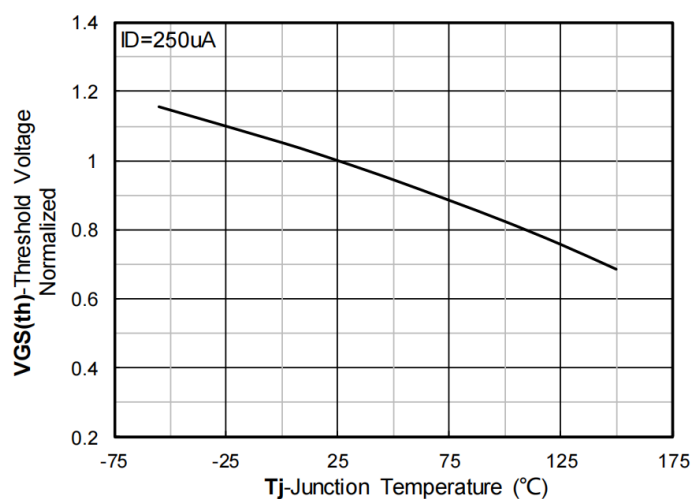


Fig 10: Normalized Threshold voltage

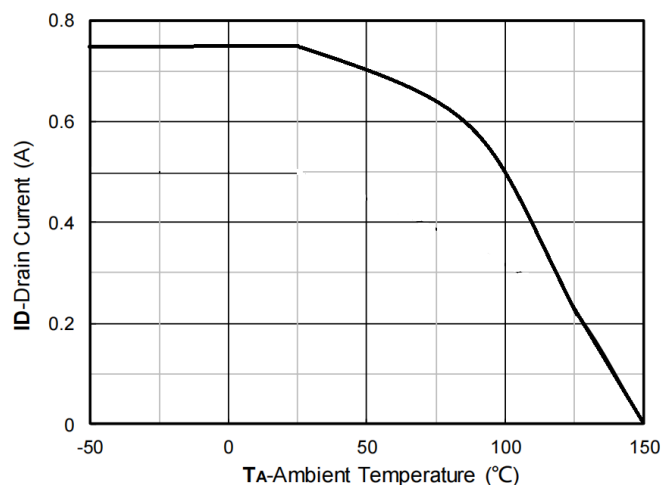


Fig 11: Current dissipation

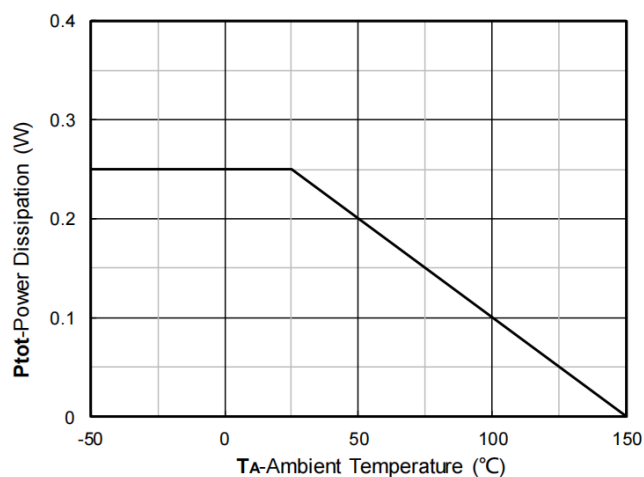
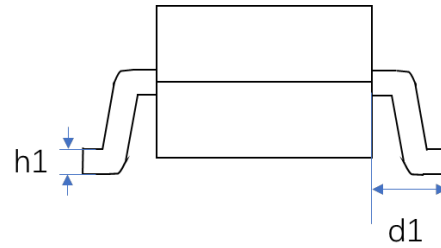
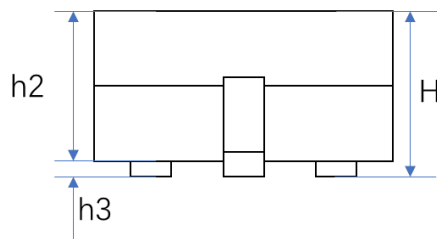


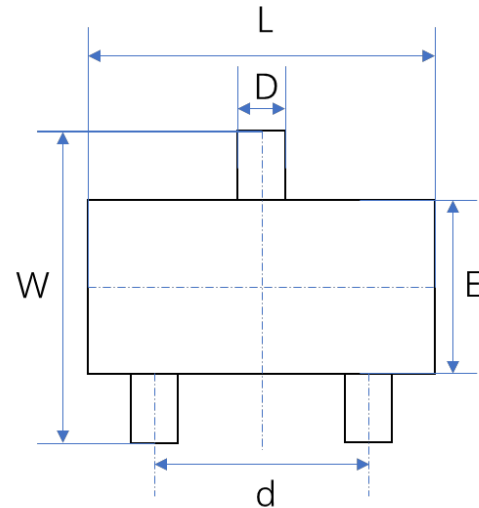
Fig 12: Power dissipation

9 Product dimension

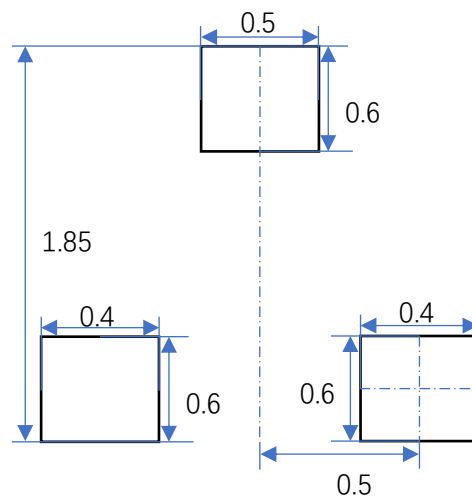
SOT-523



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
SLMT520V1CN	3000/Tape & Reel	7 inch