

N-Channel Enhancement Mode MOSFET

1 Features

- $V_{DS} = 20V$, $I_D = 2.3A$
- $R_{DS(ON)} < 72m\Omega$ @ $V_{GS} = 4.5V$
- $R_{DS(ON)} < 95m\Omega$ @ $V_{GS} = 2.5V$
- High Power and current handling capability
- Lead free product is acquired
- Package SOT-523

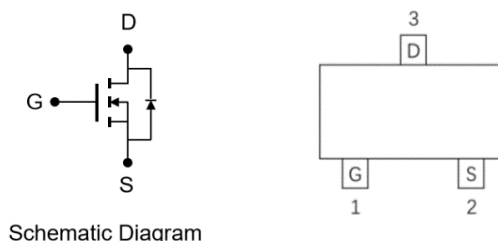
2 Applications

- PWM applications
- Load switch
- Power management

3 Description

The SLMT520V2CN 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 is low. This device is suitable for use as a load switch or in PWM applications.

4 Pin Configuration and Top View



SOT-523

5 Device Information

PART NUMBER	MARKING	PACKAGE	BODY SIZE (NOM)
SLMT520V2CN	2302	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	2.3	A
Pulsed Drain Current	I_{DP}	9.2	A
Total power dissipation	P_D	700	mW
Channel temperature	T_J	150	°C
Range of storage temperature	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	180	°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		1.1	V
Drain Cut Off Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±10	μA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 0.5A		48	72	mΩ
		V _{GS} = 2.5V, I _D = 0.4A		65	95	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _G	V _{DS} =10V, I _D =1A, V _{GS} = 4.5V		2.9		nC
Gate-Source Charge	Q _{GS}			0.4		nC
Gate-Drain Charge	Q _{GD}			0.6		nC
Input Capacitance	C _{ISS}	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz		280		pF
Reverse Transfer Capacitance	C _{RSS}			29		pF
Output Capacitance	C _{OSS}			46		pF
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V I _D =1A, R _G =3Ω		13		ns
Turn-Off Delay Time	t _{d(off)}			18		ns
Rise Time	t _r			19		ns
Fall Time	t _f			23		ns
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V		0.8	1.2	V

8 Typical Characteristics

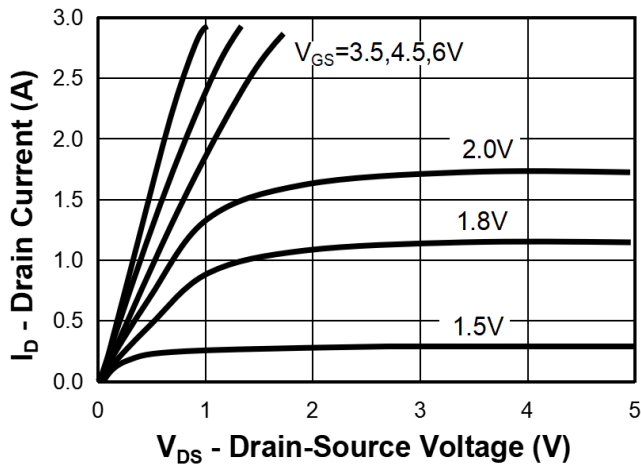


Fig 1. Output Characteristics

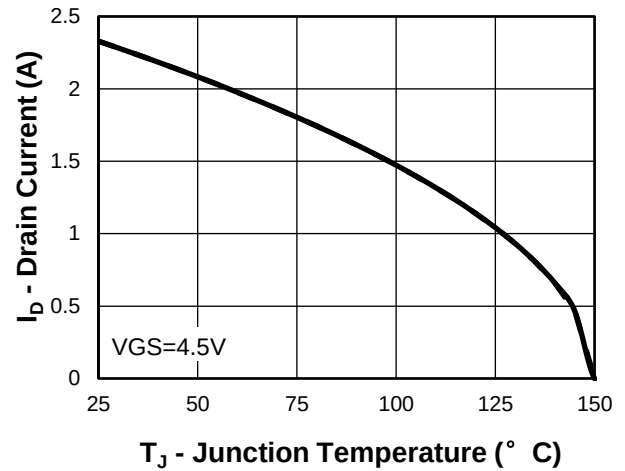


Fig 2. Drain Current

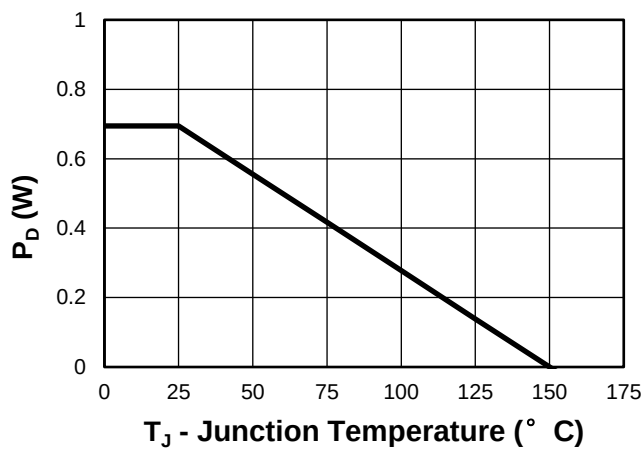


Fig 3. Power Dissipation

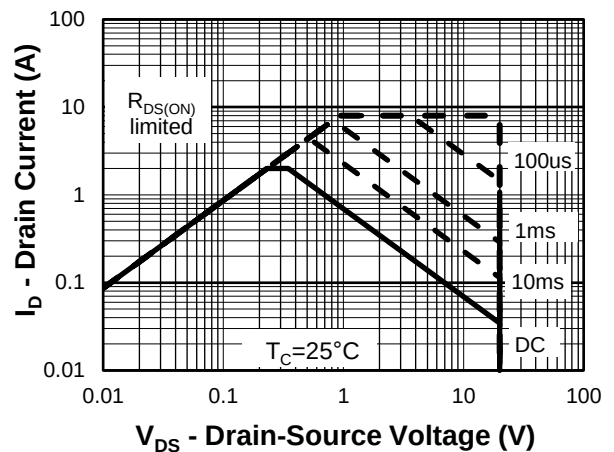


Fig 4. Safe Operation Area(SOA)

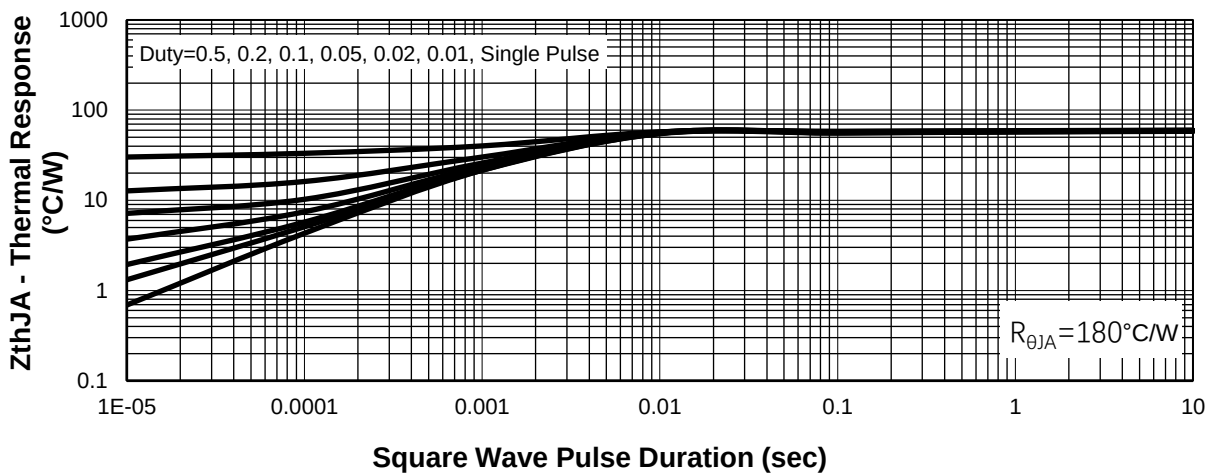


Fig 5. Thermal Transient Impedance

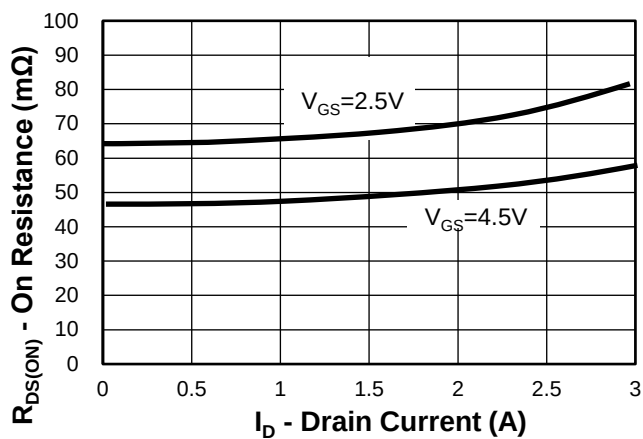


Fig 6. Rdson vs. Drain Current Characteristics

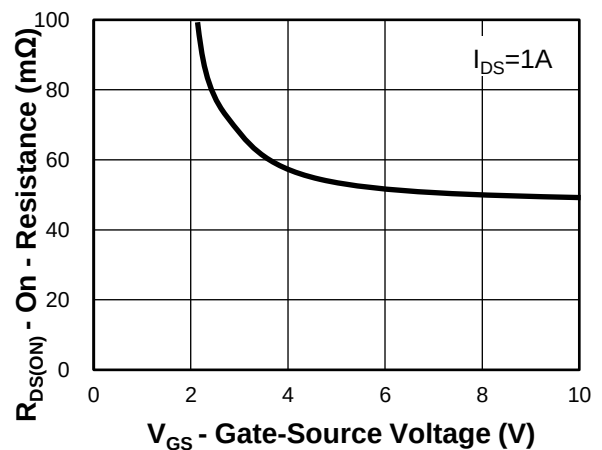


Fig 7. Gate-Source on Resistance

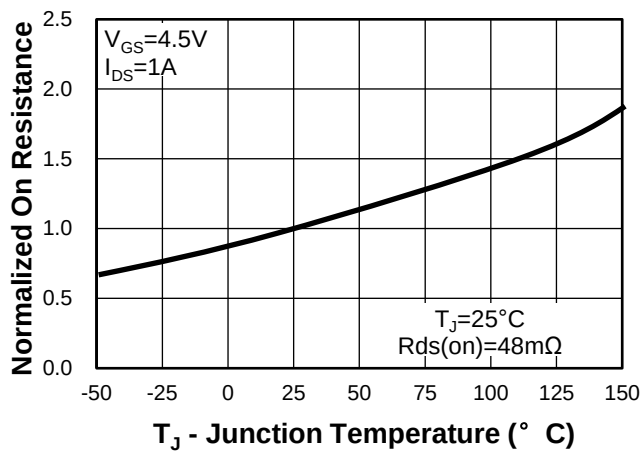


Fig 8. Rdson vs. Junction Tem Characteristics

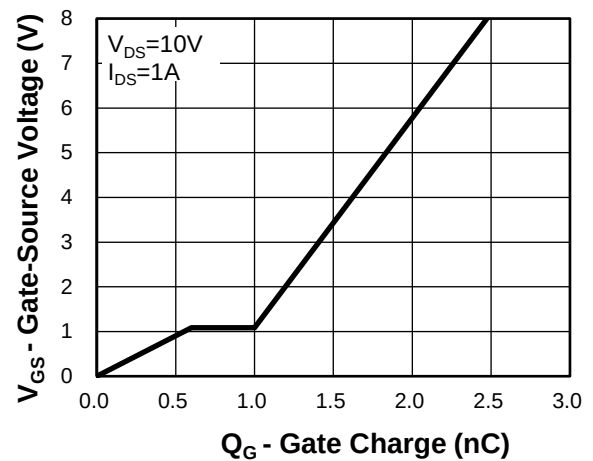


Fig 9. Gate Charge Characteristics

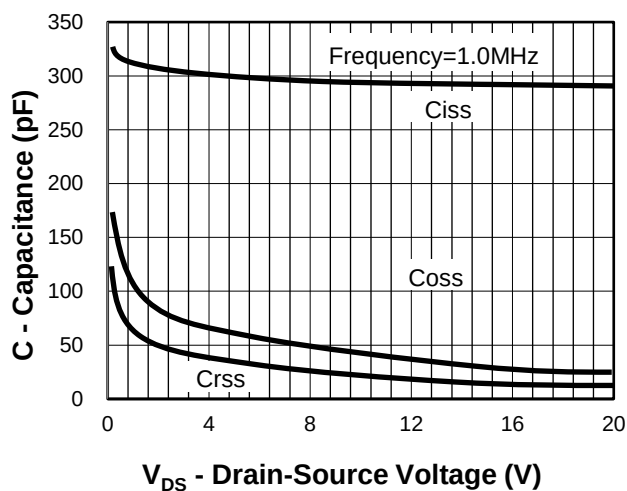


Fig 10. Capacitance Characteristics

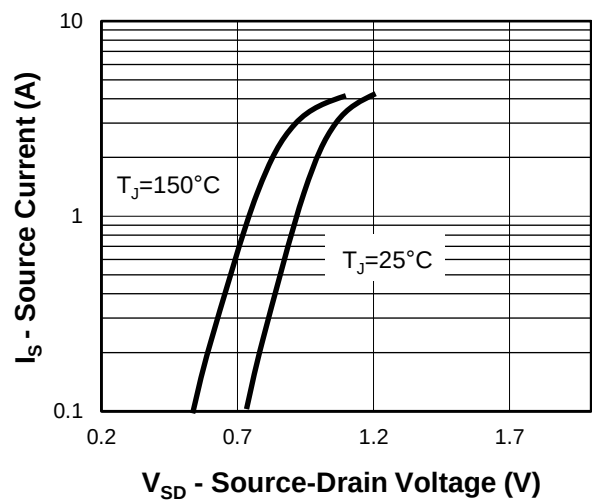
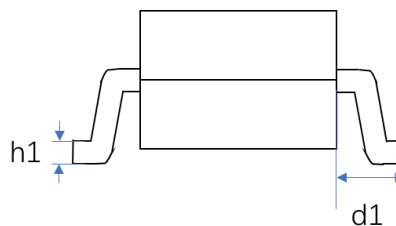
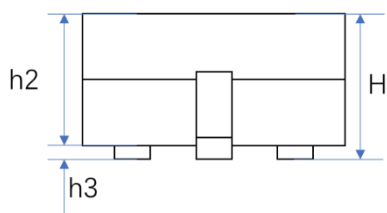


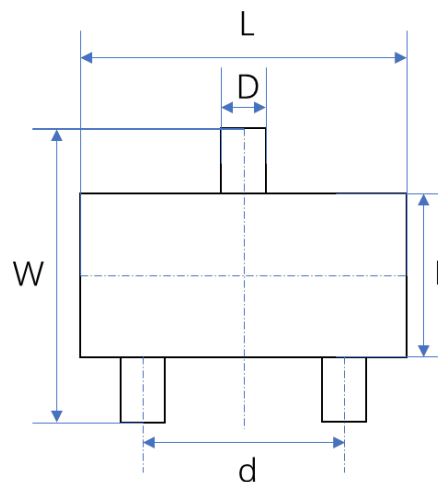
Fig 11. Source-Drain Diode Forward

9 Product dimension

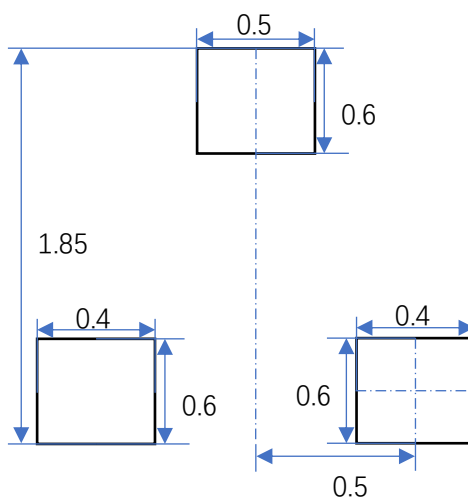
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DIM	UNITS (mm)		
	MIN.	TYP.	MAX.
L	1.50	1.60	1.70
W	1.45	1.60	1.75
H	0.70	0.80	0.90
D	0.25	-	0.35
h1	0.10	0.15	0.20
h2	0.70	0.75	0.80
h3	-	-	0.10
E	0.70	0.80	0.90
d	0.90	1.00	1.10
d1	-	0.40	-



10 PCB Layout Footprints (Units: mm)



11 Ordering Information

Part Number	Packaging	Reel Size
SLMT520V2CN	3000/Tape & Reel	7 inch