

N-Channel Enhancement Mode MOSFET

1 Features

- $V_{DS} = 20V$, $I_D = 4.1A$
- $R_{DS(ON)} < 52m\Omega$ @ $V_{GS}=4.5V$
- $R_{DS(ON)} < 80m\Omega$ @ $V_{GS}=2.5V$
- $R_{DS(ON)} < 90m\Omega$ @ $V_{GS}=1.8V$
- High density cell design for extremely low $R_{DS(ON)}$
- Lead free product is acquired
- Package SOT-23

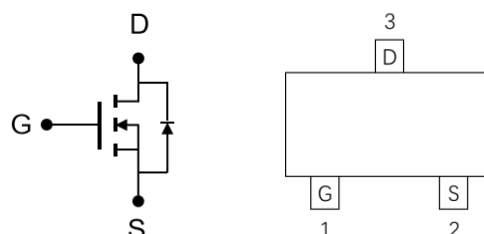
2 Applications

- Cellular Handsets and Accessories
- PWM applications
- Load switch
- Power management

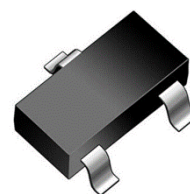
3 Description

The SLMT320V4CN provide the best combination of fast switching, low on-resistance and cost-effectiveness. The MOSFET is the N-Channel enhancement mode power field effect transistors with high cell density, trench technology. This high density process and design have been optimized switching performance and especially tailored to minimize on-state resistance.

4 Pin Configuration and Top View



Schematic Diagram



SOT-23

5 Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
SLMT320V4CN	SOT-23	2.90 mm x 2.40mm

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	4.1	A
Pulsed Drain Current	I_{DP}	12.4	A
Total power dissipation	P_D	1.4	W
Channel temperature	T_J	-55 to +150	°C
Range of storage temperature	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	90	°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	0.55		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			±0.1	μA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 4.1A		40	52	mΩ
		V _{GS} = 2.5V, I _D = 2.0A		55	80	mΩ
		V _{GS} = 1.8V, I _D = 2.0A		70	90	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _G	V _{DS} =10V, I _D =4.1A, V _{GS} = 4.5V		3.3		nC
Gate-Source Charge	Q _{GS}			0.4		nC
Gate-Drain Charge	Q _{GD}			1.0		nC
Input Capacitance	C _{ISS}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		270		pF
Reverse Transfer Capacitance	C _{RSS}			29		pF
Output Capacitance	C _{OSS}			40		pF
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V , I _D =1.5A R _G =3.0Ω		13		ns
Turn-Off Delay Time	t _{d(off)}			18		ns
Rise Time	t _r			54		ns
Fall Time	t _f			11		ns
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 4.1A, V _{GS} = 0V			1.2	V

8 Typical Characteristics

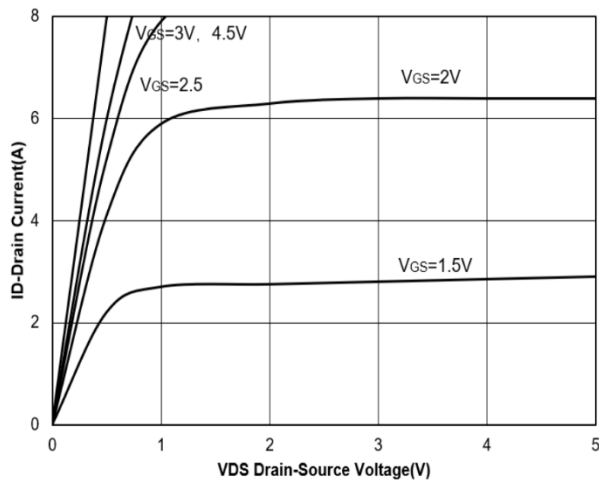


Figure 1. Output Characteristics

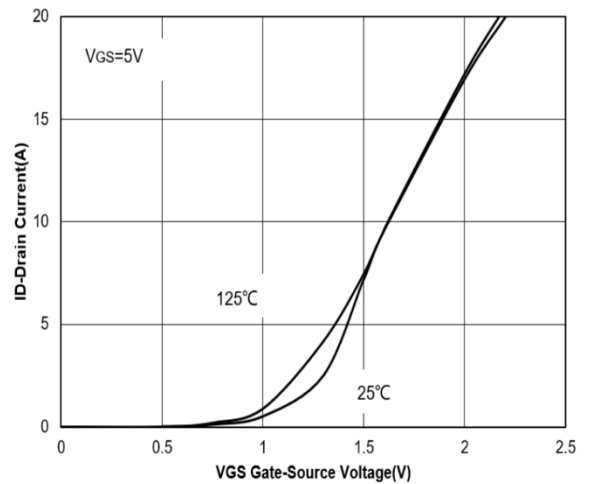


Figure 2. Transfer Characteristics

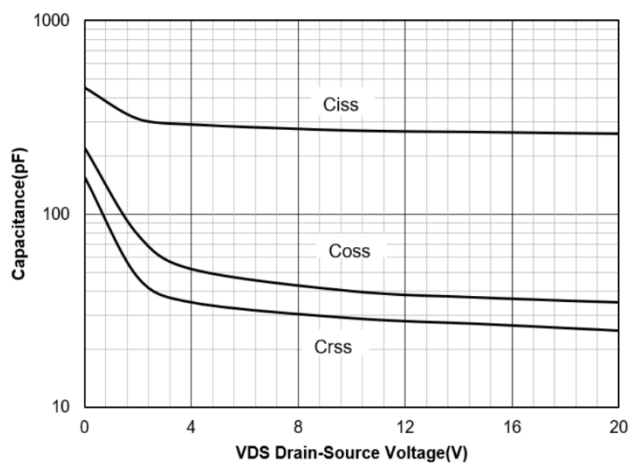


Figure 3. Capacitance Characteristics

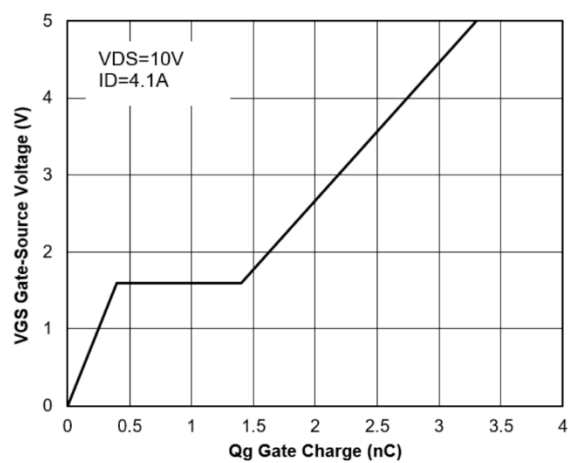


Figure 4. Gate Charge

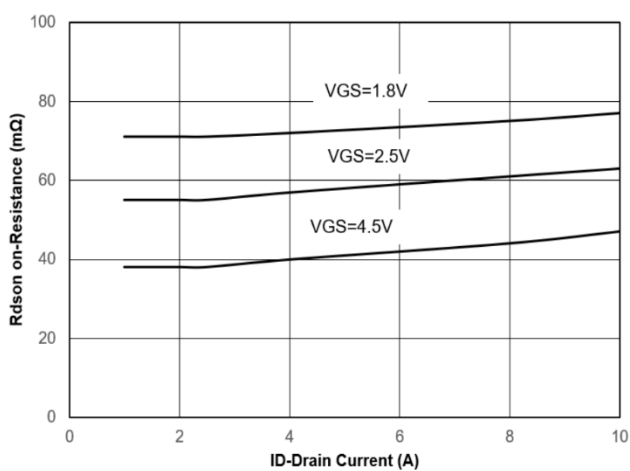


Figure 5. Drain-Source on Resistance

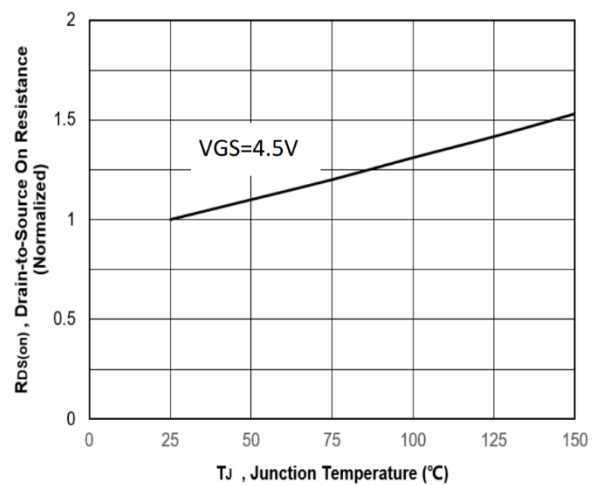


Figure 6. Normalized On-Resistance Vs. Temperature

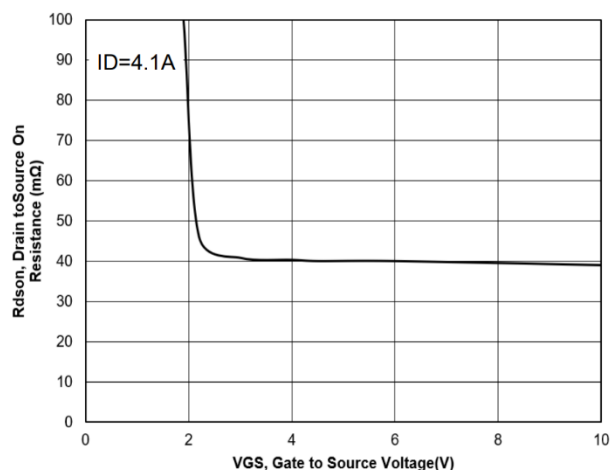


Figure 7. On-Resistance VS Gate-Source Voltage

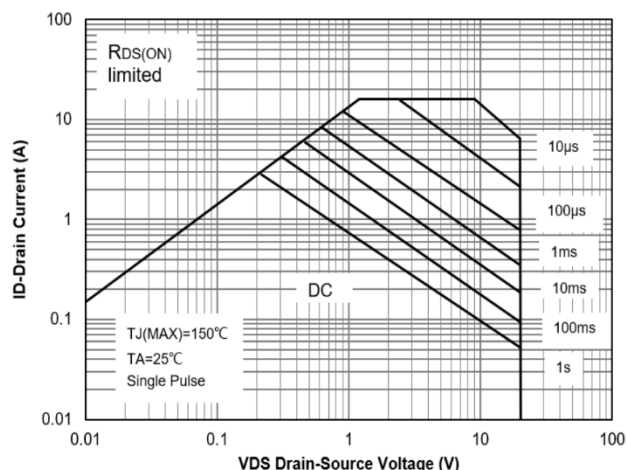


Figure 8. Safe Operation Area

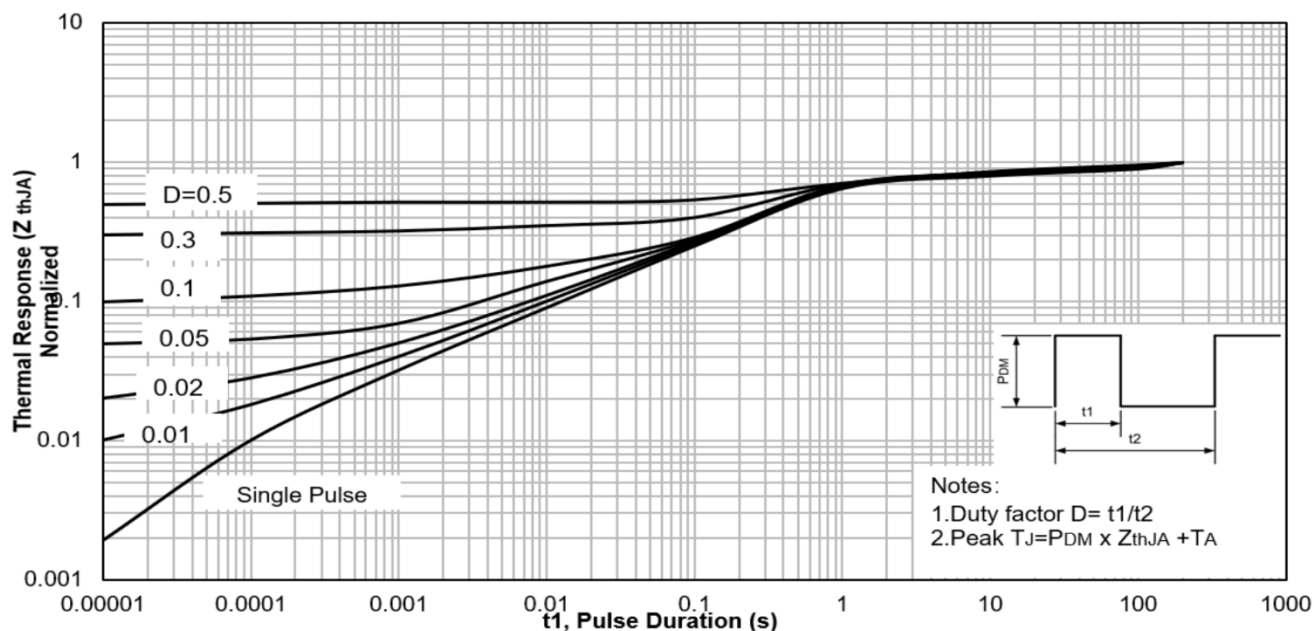
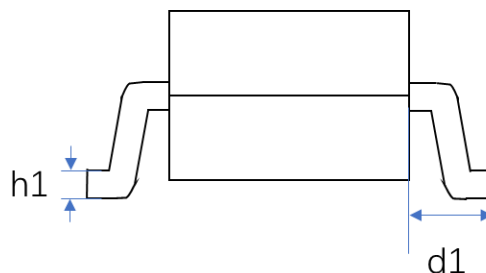
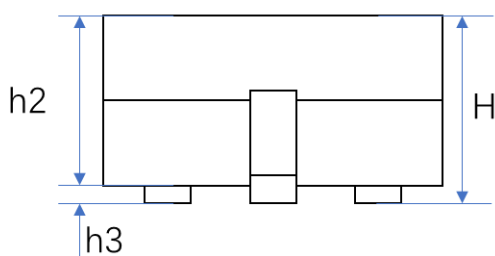


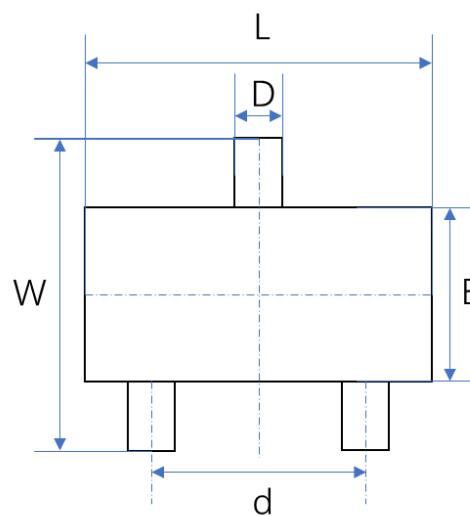
Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

9 Product dimension

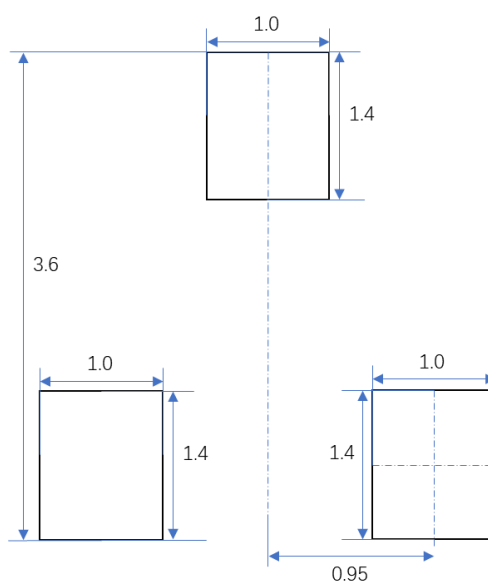
SOT-23



DIM	UNITS (mm)		
	MIN.	TYP.	MAX.
L	2.70	-	3.12
W	2.10	-	2.64
D	0.30	-	0.50
E	1.10	-	1.50
d	1.80	-	2.00
d1	-	0.55	-
H	0.90	-	1.15
h1	0.08	-	0.21
h2	0.86	-	1.05
h3	0.04	-	0.15



10 PCB Layout Footprints (Units: mm)



11 Ordering Information

Part Number	Packaging	Reel Size
SLMT320V4CN	3000/Tape & Reel	7 inch