

P-Channel Enhancement Mode MOSFET

1 Features

- $V_{DS} = -20V$, $I_D = -3.8A$
- $R_{DS(ON)} < 64m\Omega$ @ $V_{GS} = -4.5V$
- $R_{DS(ON)} < 80m\Omega$ @ $V_{GS} = -2.5V$
- $R_{DS(ON)} < 110m\Omega$ @ $V_{GS} = -1.8V$
- High density cell design for extremely low $R_{DS(ON)}$
- Lead free product is acquired
- Conventional SOT-23 Package

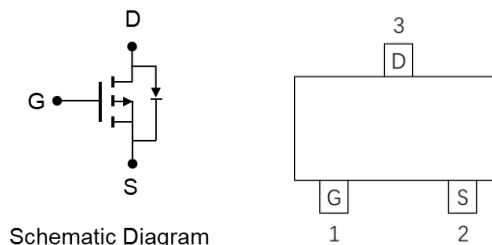
2 Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Portable Instrumentation
- Load switch

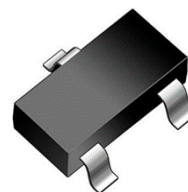
3 Description

The SLMT320V4CP provide the best combination of fast switching, low on-resistance and cost-effectiveness. The MOSFET is the P-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



5 Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
SLMT320V4CP	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	-3.8	A
Pulsed Drain Current	I_{DP}	-15.2	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	-0.4		-1.0	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			±100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D = -3.8A		49	64	mΩ
		V _{GS} = -2.5V, I _D = -3.0A		59	80	mΩ
		V _{GS} = -1.8V, I _D = -2.5A		79	110	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _G	V _{DS} =-10V, I _D =-3.8A, V _{GS} = -4.5V		4.3		nC
Gate-Source Charge	Q _{GS}			0.8		nC
Gate-Drain Charge	Q _{GD}			1.1		nC
Input Capacitance	C _{ISS}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		720		pF
Reverse Transfer Capacitance	C _{RSS}			69		pF
Output Capacitance	C _{OSS}			80		pF
Turn-On Delay Time	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V , I _D =-1A R _G =2.5Ω		12		ns
Turn-Off Delay Time	t _{d(off)}			15		ns
Rise Time	t _r			54		ns
Fall Time	t _f			9		ns
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = -3.8A, V _{GS} = 0V		-0.8	-1.2	V

8 Typical Characteristics

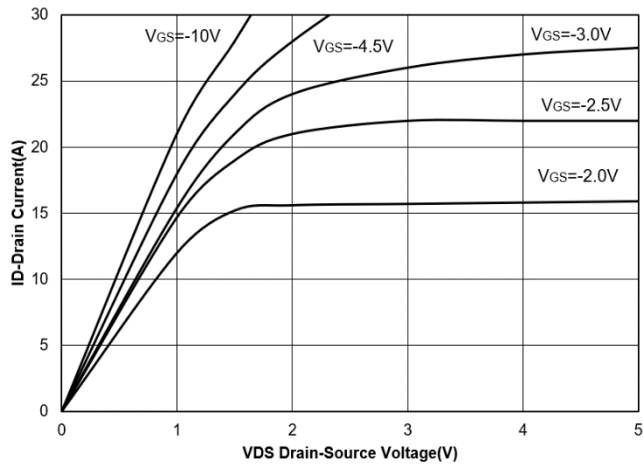


Fig 1: Output Characteristics

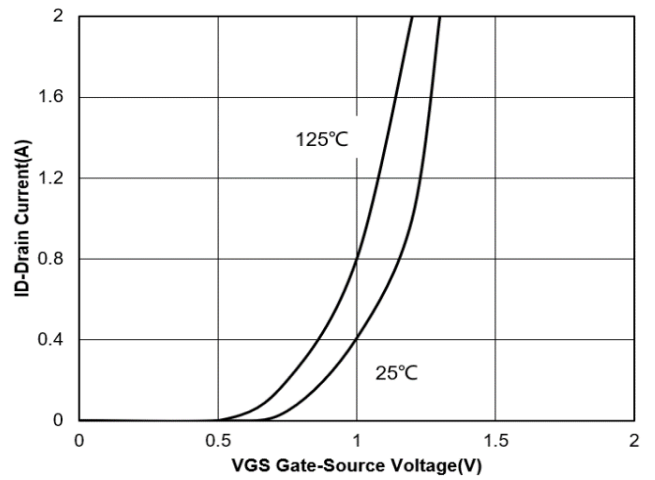


Figure 2: Transfer Characteristics

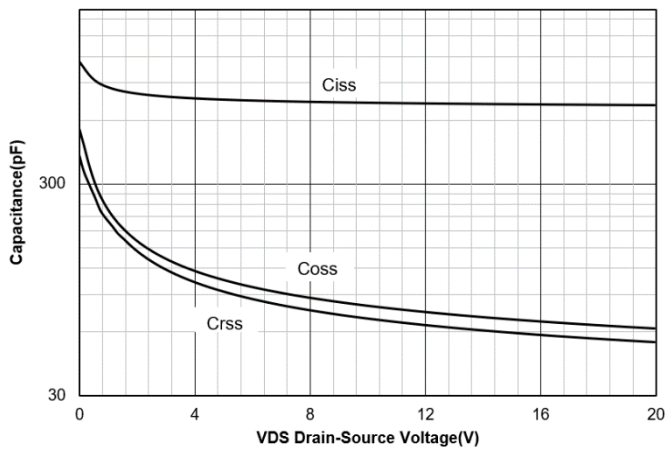


Figure 3: Capacitance Characteristics

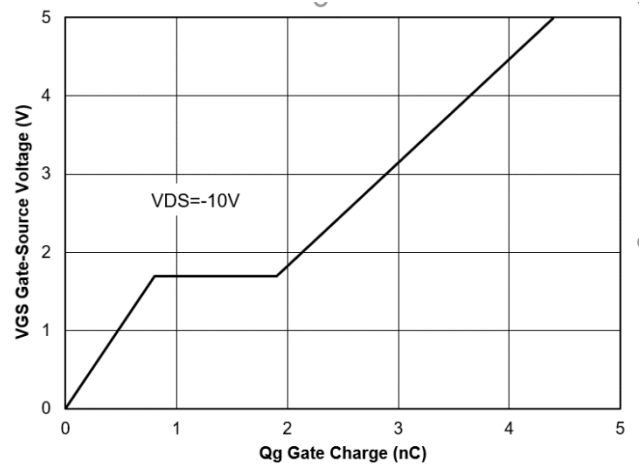


Figure 4: Gate Charge

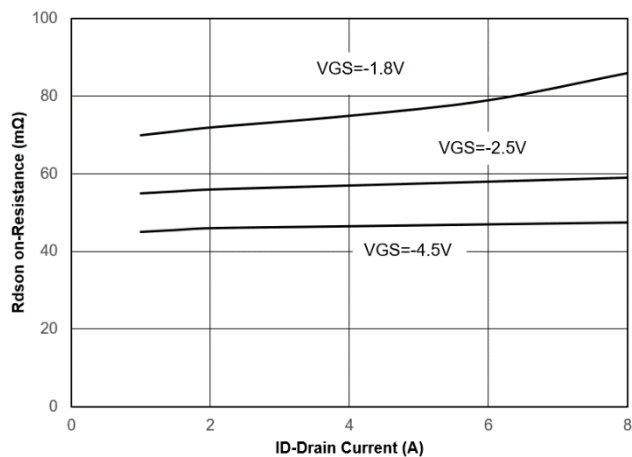


Figure 5: Drain-Source on Resistance

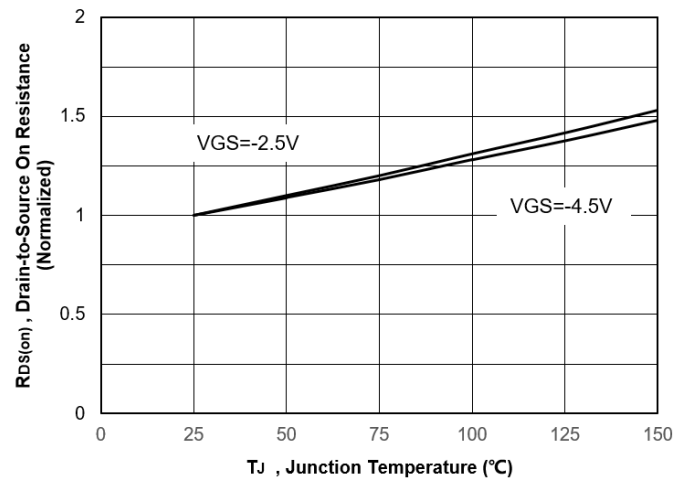


Figure 6: Normalized On-Resistance Vs. Temperature

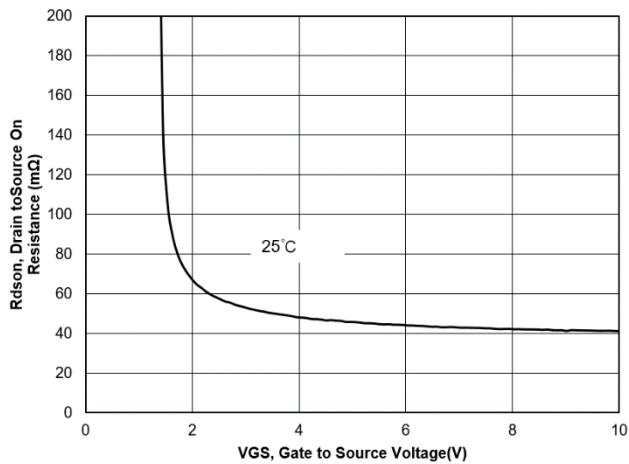


Figure 7: Typical Drain to Source ON Resistance
VS Gate Voltage and Drain Current

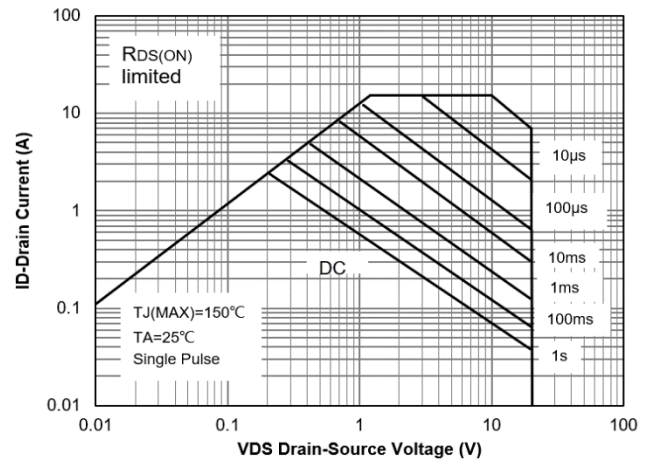


Figure 8: Safe Operation Area

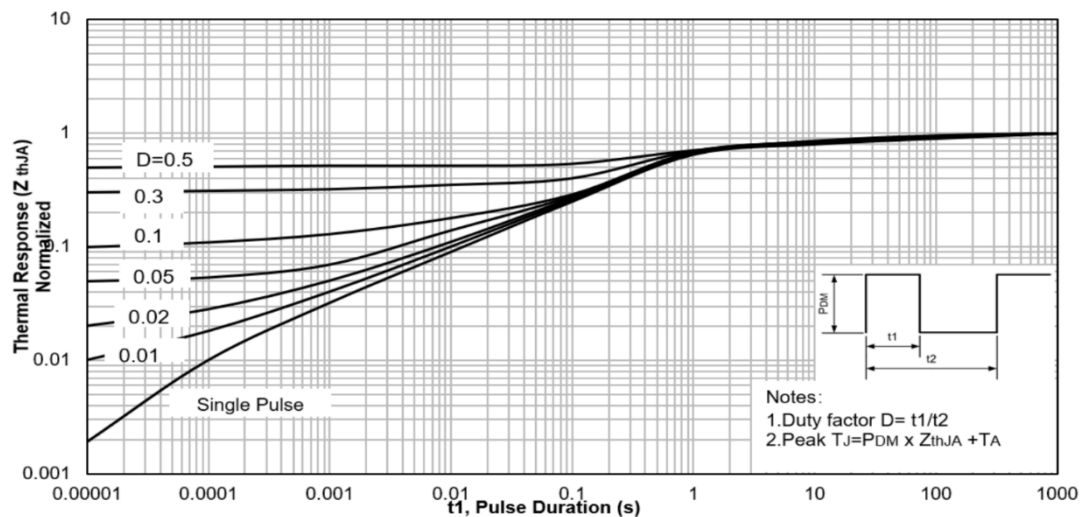


Figure 9. Maximum Effective Transient Thermal Impedance ,Junction-to-Ambient

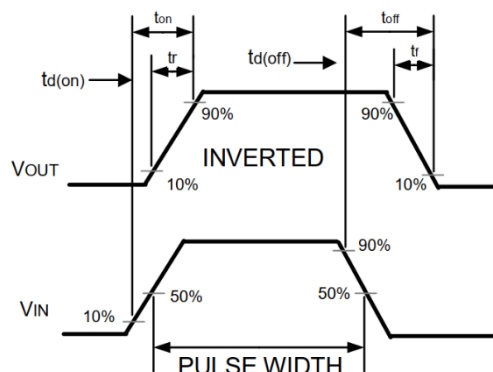
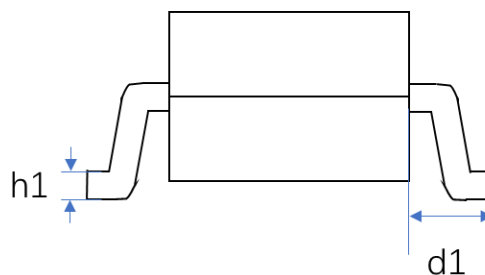
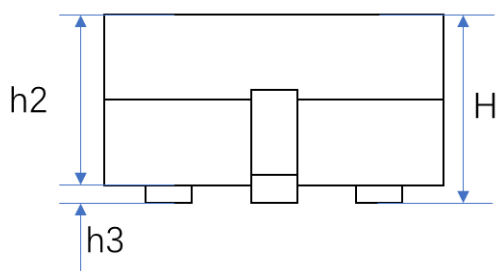
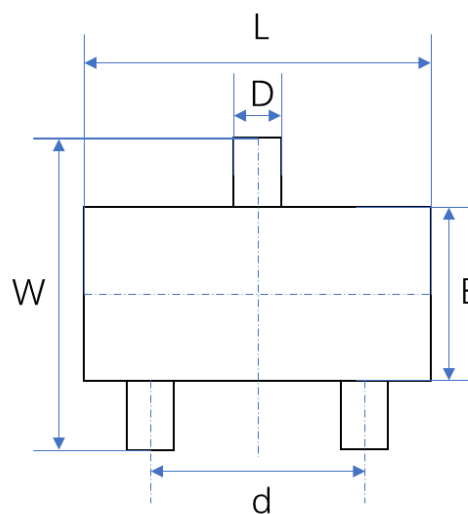


Figure 10. Switching wave

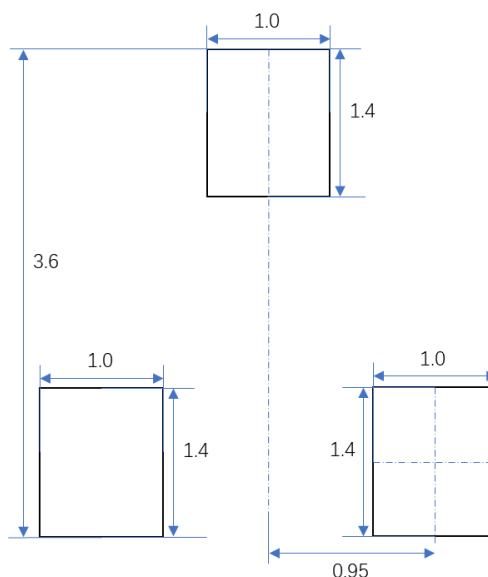
9 Product dimension



DIM	UNITS (mm)		
	MIN.	TYP.	MAX.
L	2.80	-	3.00
W	2.25	-	2.55
D	0.30	-	0.50
E	1.20	-	1.40
d	1.80	-	2.00
d1	-	0.55	-
H	0.90	-	1.15
h1	0.08	-	0.15
h2	0.9	-	1.05
h3	0.00	-	0.10



10 PCB Layout Footprints (Units: mm)



11 Ordering Information

Part Number	Packaging	Reel Size
SLMT320V4CP	3000/Tape & Reel	7 inch