SC125N75ZLTK-R

Silicon Carbide MOSFET 750V, 125mΩ, 26A

重庆平伟半导体股份有限公司

Features

- 0 V turn-off gate voltage can be applied
- High Blocking Voltage with Low RDS(on)
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Qualified according to JEDEC criteria

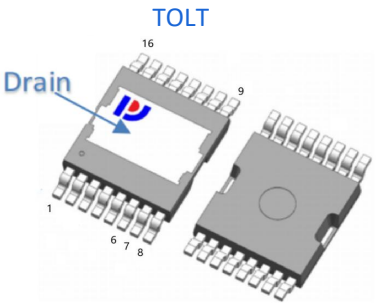
Applications

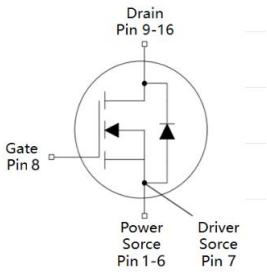
- Lighting
- Telecom and UPS
- PWM stages for e.g. PC Silverbox, Adapter, LCD & PDP TV
- Motor Drives
- High Voltage DC/DC Converters

100% DVDS Tested
100% AvalancheTested

Product Summary

V_{DS}	750V
$R_{DS(on)\ typ.}$	125mΩ
I_D	26A





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SC125N75ZLTK-R	SC125N75ZLTK	TOLT	Tape&Reel	13 inches	24mm	1200pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	750	V
Continuous drain current T_C = 25°C T_C = 100°C	I_D	 26 18	A
Pulsed drain current (T_C = 25°C)	$I_{D\ pulse}$	104	A
Avalanche energy, single pulse (L=5mH)	E_{AS}	90	mJ
Gate-Source voltage,max.transient voltage	V_{GSmax}	-10/+22	V
Recommended operating values	V_{GSsop}	0/+15 to 18	V
Power dissipation T_C = 25°C	P_{tot}	 111	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+175	°C

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	R_{thJC}	-	0.9	1.4	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	R_{thJA}	-	-	40.0	°C/W	-

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	750	-	-	V	V_{GS}=0V, I_D=1mA
Gate threshold voltage	$V_{GS(th)}$	2.7	3.2	4.5	V	V_{DS}=V_{GS}, I_D=5mA
Zero gate voltage drain current	I_{DSS}	- -	0.5 -	10 100	μA	V_{DS}=750V,V_{GS}=0V T_j=25°C T_j=175°C
Gate-source leakage current	I_{GSS}	-	-	200	nA	V_{GS}=22V,V_{DS}=0V
		-	-	-200	nA	V_{GS}=-10V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	125	165	mΩ	V_{GS}=15V,I_D=12A
Drain-source on-state resistance	$R_{DS(on)}$	-	93	125	mΩ	V_{GS}=18V,I_D=12A
Transconductance	g_{fs}	-	13	-	S	V_{DS}=20V,I_D=12A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	793	-	pF	V_{GS}=0V, V_{DS}=500V, f=100KHz
Output Capacitance	C_{oss}	-	58	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Gate Total Charge	Q_G	-	33	-	nC	V_{DS}=500V,I_D=12A ,V_{GS}=0/15V
Gate-Source charge	Q_{gs}	-	13	-		
Gate-Drain charge	Q_{gd}	-	13	-		
Turn-on delay time	$t_{d(on)}$	-	16	-	ns	V_{GS}=0/15V, V_{DD}=400V, R_G=2Ω,I_D=12A
Rise time	t_r	-	48	-		
Turn-off delay time	$t_{d(off)}$	-	21	-		
Fall time	t_f	-	34	-		
Gate resistance	R_G	-	3.5	-	Ω	V_{GS}=0V, f=100KHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	3.2	-	V	V_{GS}=0V, I_{SD}=6A T_j=25°C
Body Diode Continuous Forward Current	I_S	-	6	-	A	T_C = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	14	-	ns	V_{GS}=0V,I_{SD}=12A, V_R=500V di/dt=1200A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	56	-	nC	
Peak Reverse Recovery Current	I_{RRM}	-	6.5	-	A	

Typical Performance Characteristics

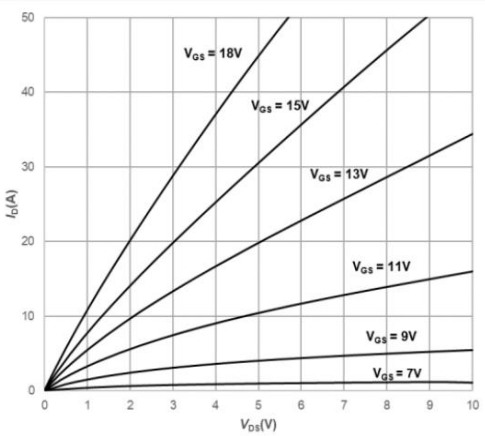


Fig1. Output Characteristics T_j=25℃

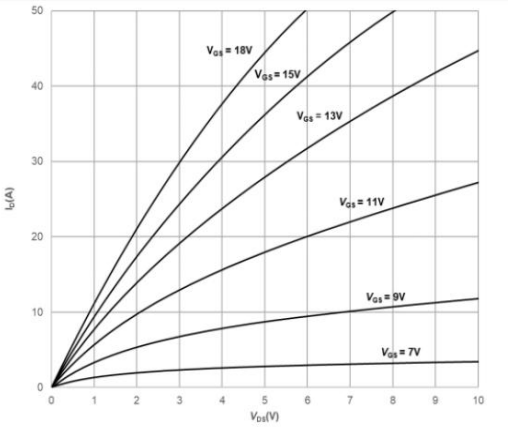


Fig2. Output Characteristics T_j=175℃

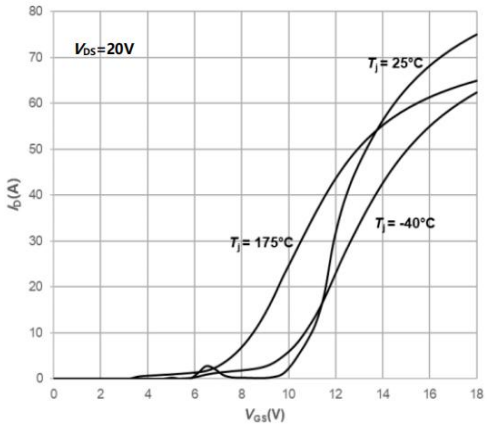


Fig3. Typical Transfer Characteristics

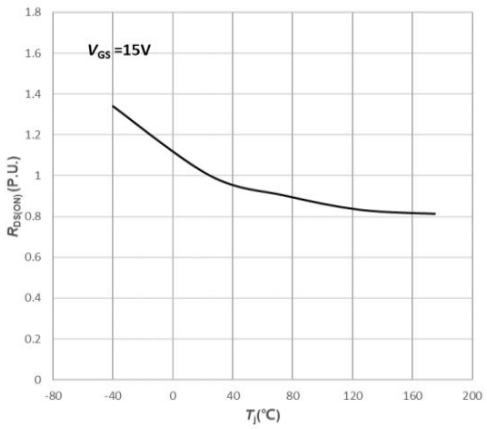


Fig4. Normalized On-Resistance vs. Temperature

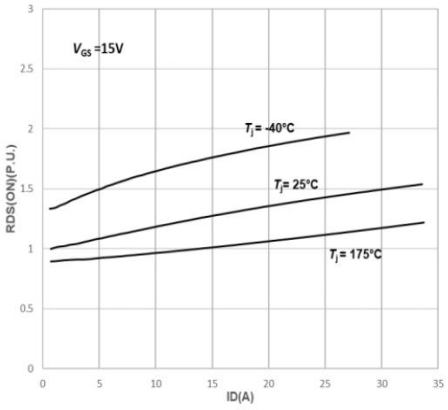


Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures

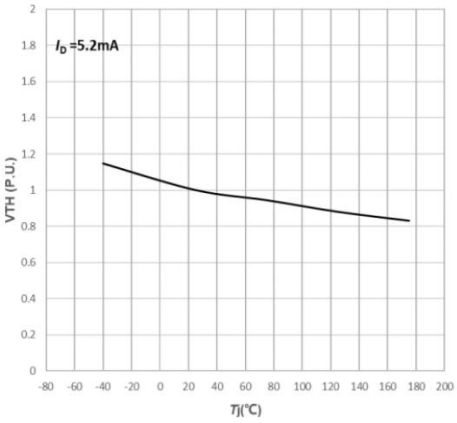


Fig6. Normalized Threshold Voltage vs. Temperature

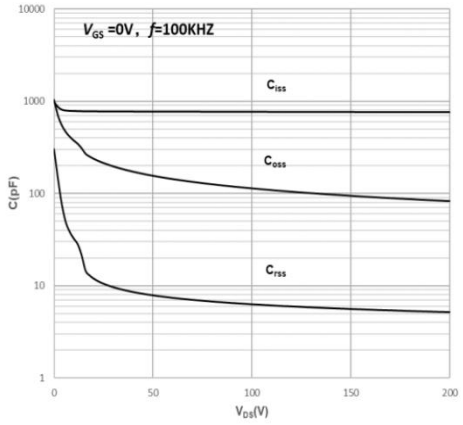


Fig7. Capacitances vs. Drain-Source Voltage (0-200V)

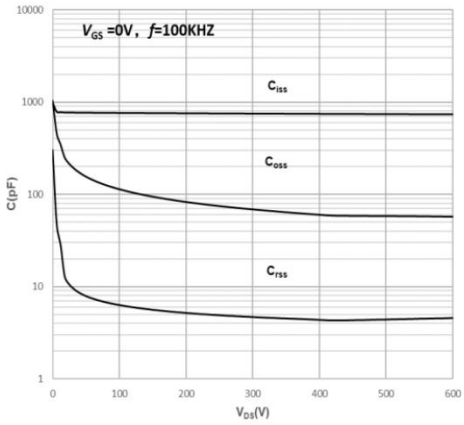


Fig8. Capacitances vs. Drain-Source Voltage (0-600V)

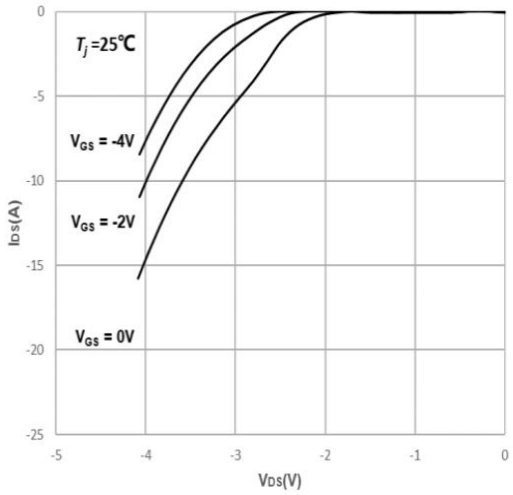
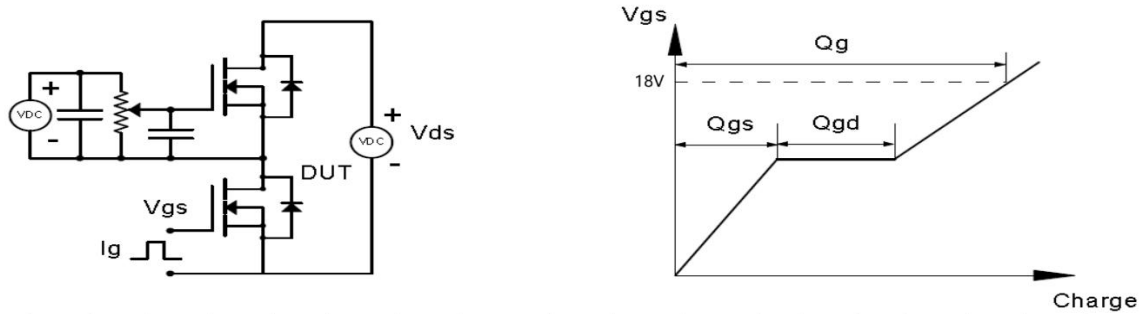


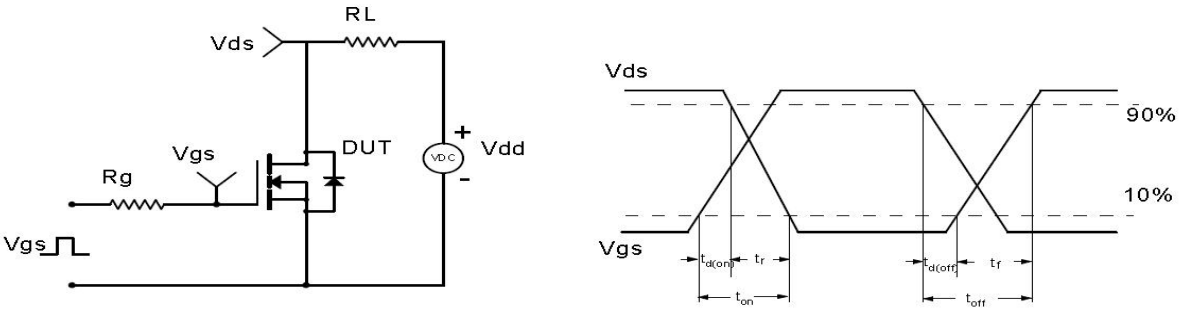
Fig9. Body Diode Characteristics

Test Circuit & Waveform

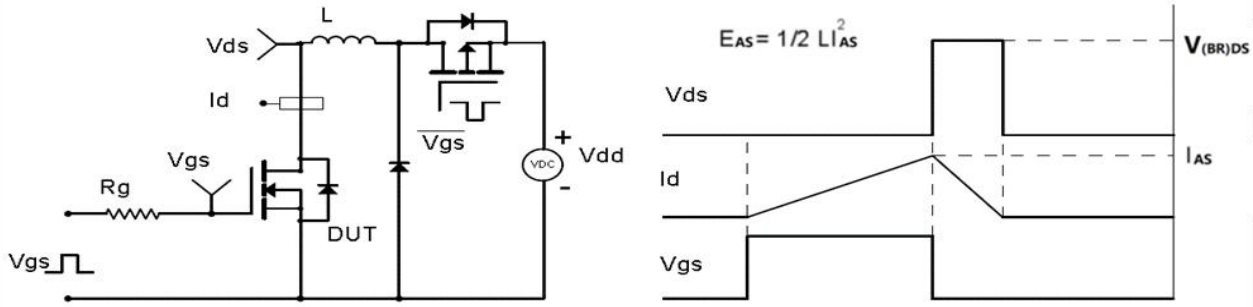
Gate Charge Test Circuit & Waveform



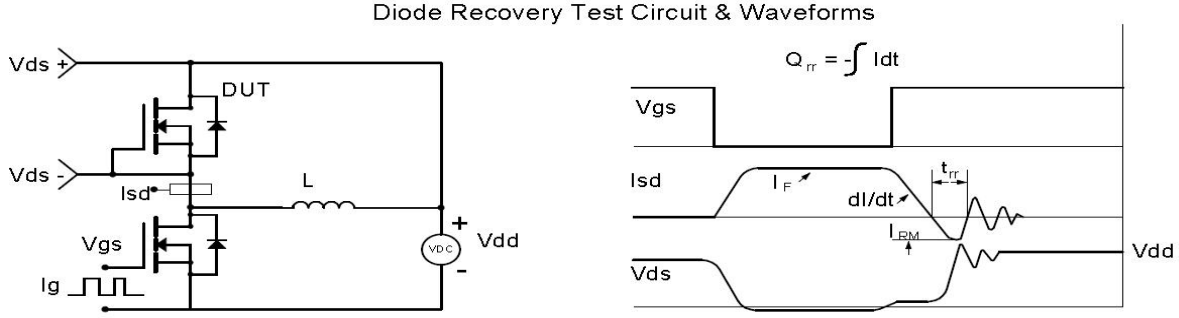
Resistive Switching Test Circuit & Waveforms



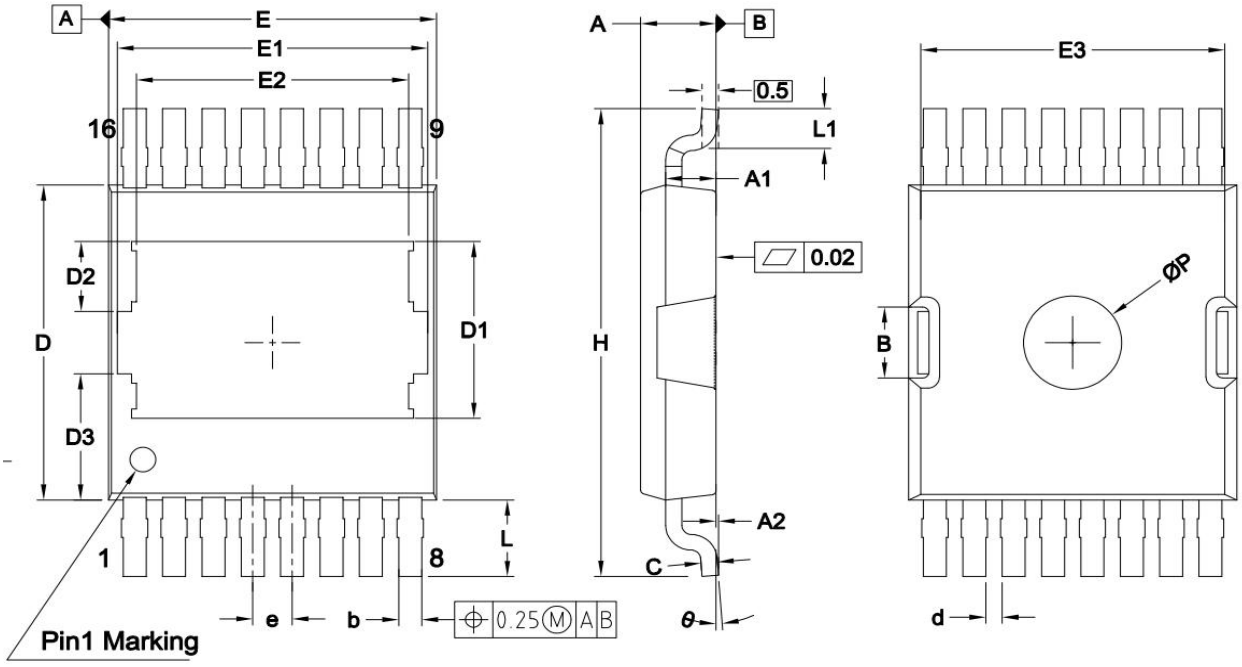
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TOLT



DIM / SYMBOL	MIN.	NOM.	MAX.
A	2.25	2.30	2.35
A1	1.44	1.54	1.64
A2	0.01	---	0.16
b	0.60	0.70	0.80
c	0.40	0.50	0.60
d	0.40	0.50	0.60
e		1.20 BSC	
D	10.00	10.10	10.30
D1	5.47	5.67	5.87
D2	2.04	2.24	2.44
D3		4.05 REF.	
E	9.70	10.00	10.30
E1		9.46 REF.	
E2	8.10	8.30	8.50
E3	9.07	9.27	9.47
H	14.80	15.00	15.20
L	2.25	2.45	2.65
L1	1.35	1.50	1.65
ØP	2.35	2.50	2.65
B	2.08	2.28	2.48
θ	1°	3°	5°

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