

Description

The LM8S7N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

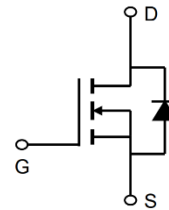
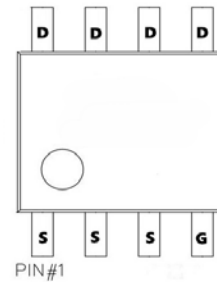
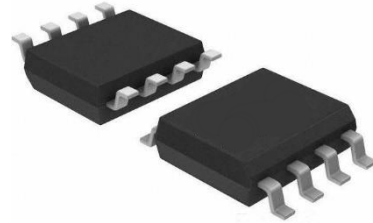
$V_{DS} = 100V$ $I_D = 7A$

$R_{DS(ON)} < 140m\Omega @ V_{GS}=10V$

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Dimensions SOP-8



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
LM8S7N10	SOP-8	7N10G	3000

Electrical Characteristics ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	7	A
$I_D @ T_A=70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	3	A
I_{DM}	Pulsed Drain Current ²	20	A
EAS	Single Pulse Avalanche Energy ³	2.25	mJ
$P_D @ T_A=25^\circ C$	Total Power Dissipation ⁴	13	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	10	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	5	$^\circ C/W$

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.8	3.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D =3A		110	140	mΩ
		V _{GS} = 4.5V, I _D =2A		160	300	mΩ
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				7	A
Gate resistance	R _G	f= 1 MHz, Open drain		8		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=100KHZ		206		pF
Output Capacitance	C _{oss}			28.9		
Reverse Transfer Capacitance	C _{rss}			1.4		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =5A		4.3		nC
Gate-Source Charge	Q _{gs}			1.5		
Gate-Drain Charge	Q _{gd}			1.1		
Reverse Recovery Charge	Q _{rr}	I _F =5A, di/dt=100A/us		39.4		ns
Reverse Recovery Time	t _{rr}			32.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _D =5A R _{GEN} =2Ω		14.7		ns
Turn-on Rise Time	t _r			3.5		
Turn-off Delay Time	t _{D(off)}			20.9		
Turn-off fall Time	t _f			2.7		

A. Repetitive rating; pulse width limited by max. junction temperature.

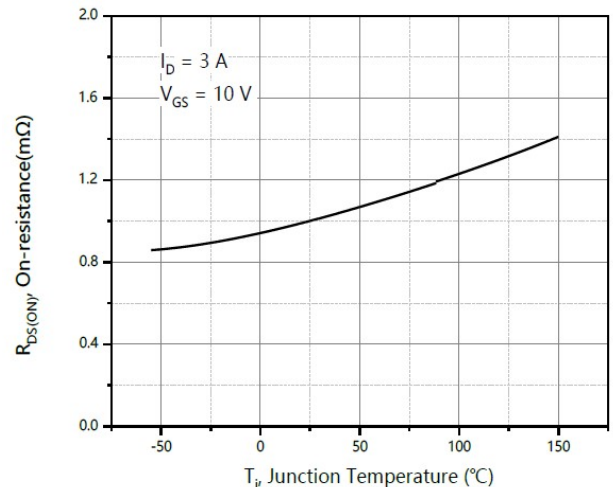
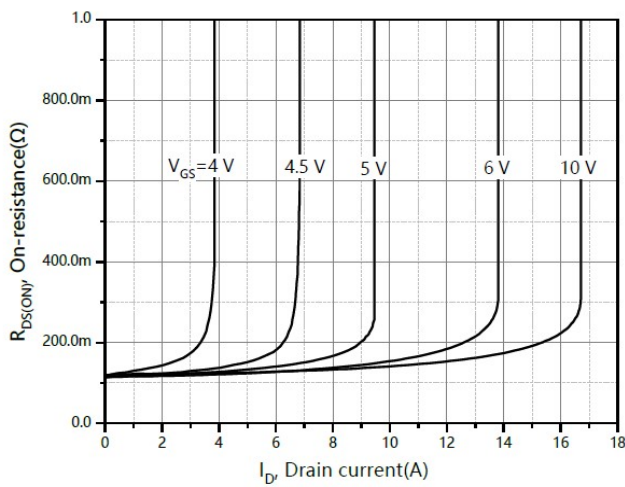
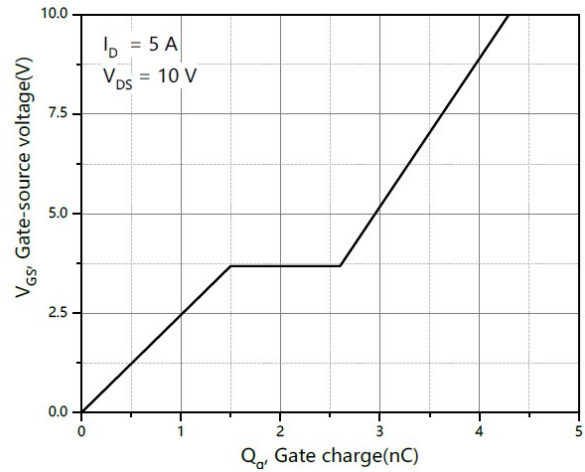
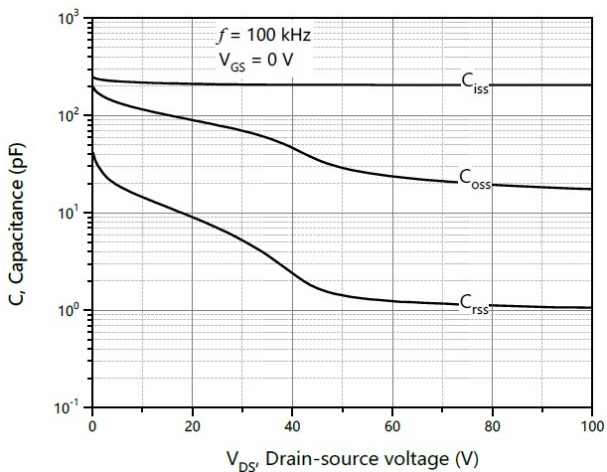
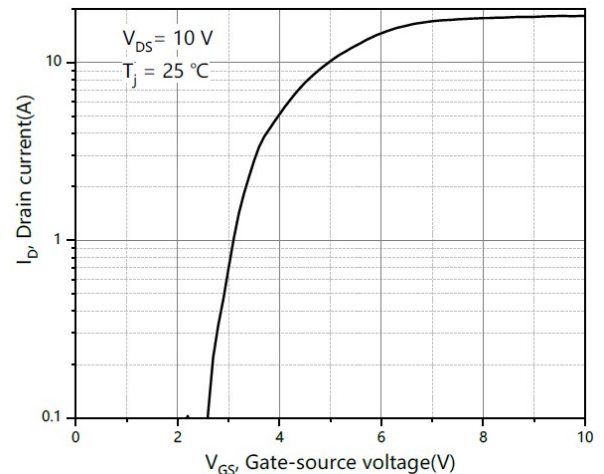
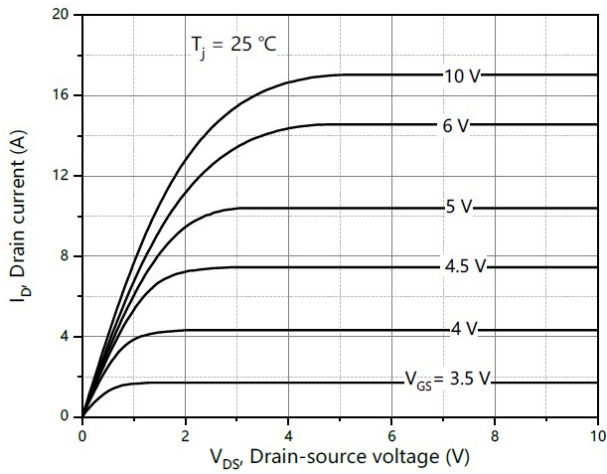
B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

C. Pd is based on max. junction temperature, using ≤10us junction-to-ambient thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

E. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient

■ Typical Performance Characteristics



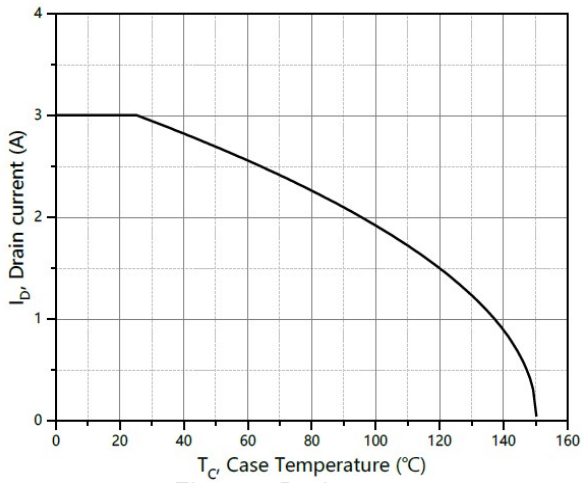


Figure 7. Drain current

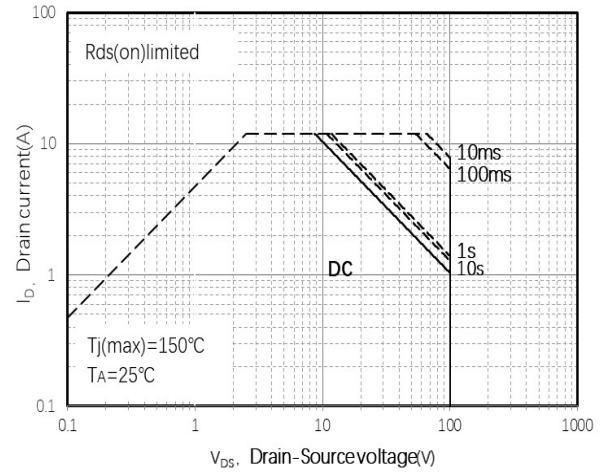


Figure 8. Safe Operation Area

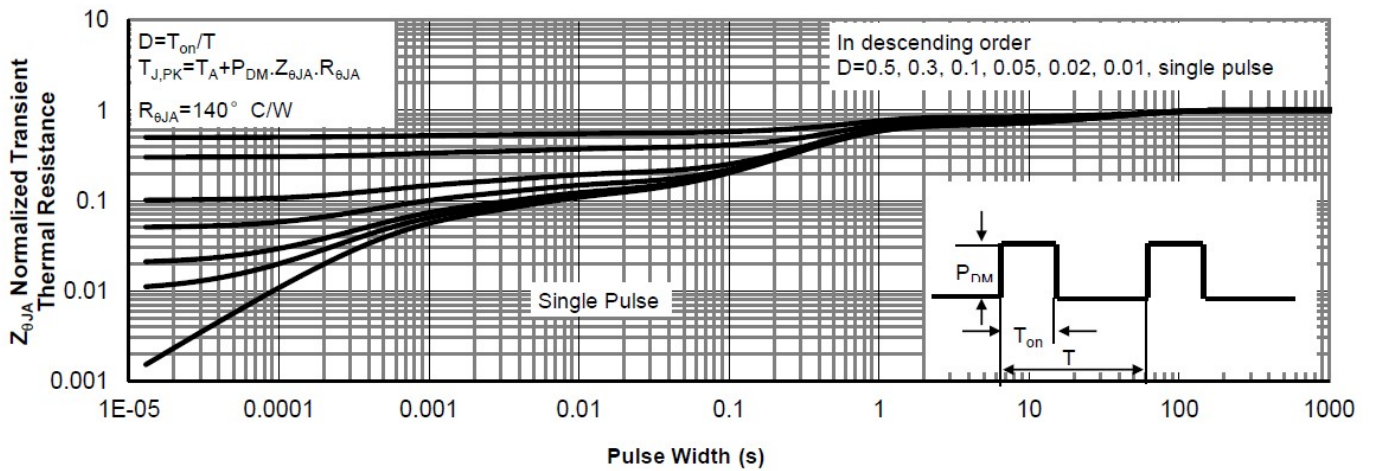
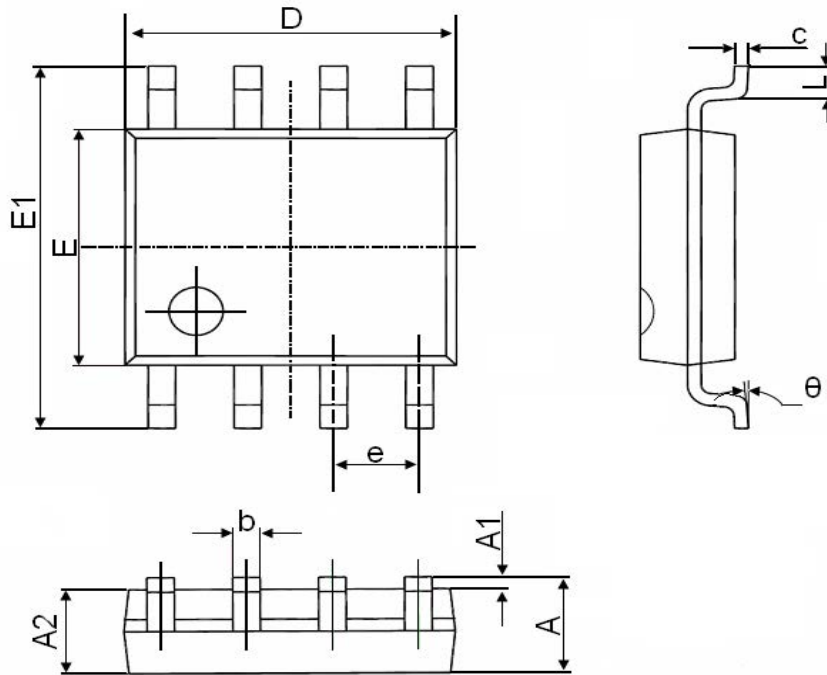


Figure 9. Normalized Maximum Transient thermal impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

NOTICE

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