

Product Summary

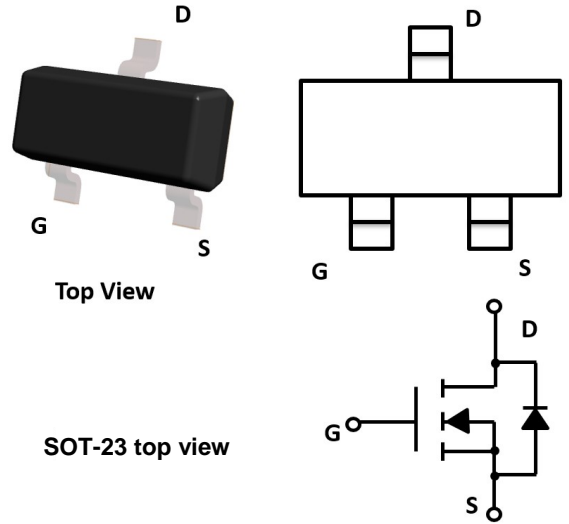
- VDS 100V
- ID 5A
- RDS(ON)(at VGS=10V) < 140 mohm
- RDS(ON)(at VGS=4.5V) < 300 mohm

General Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low RDS(ON)

Applications

- DC-DC Converters
- Power management functions



Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V _{DS}	100	V
Gate-source Voltage	V _{GS}	±20	V
Drain Current	I _D	T _A =25°C	5
		T _A =70°C	2.4
Pulsed Drain Current ^A	I _{DM}	12	A
Avalanche energy ^B	E _{AS}	8	mJ
Total Power Dissipation ^C	P _D	T _A =25°C	1.2
		T _A =70°C	0.8
Junction and Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	R _{θJA}	82	104	°C/W
Thermal Resistance Junction-to-Ambient ^{D E}		Steady-State	111	
Thermal Resistance Junction-to-Case	R _{θJL}	43	52	

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LX5N10T3	F2	K****	3000	45000	180000	7"Ree



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				5	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. P_d 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

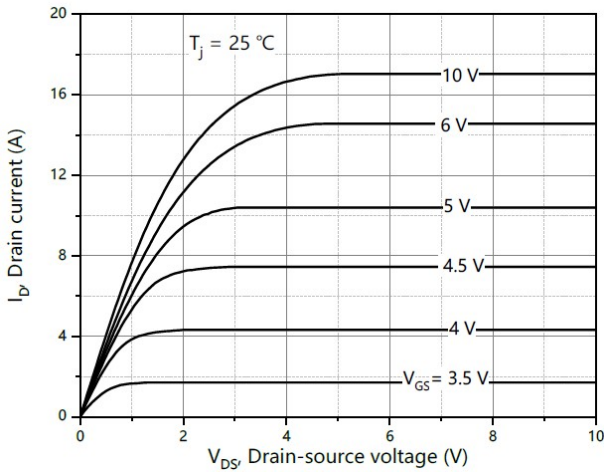


Figure1. Output Characteristics

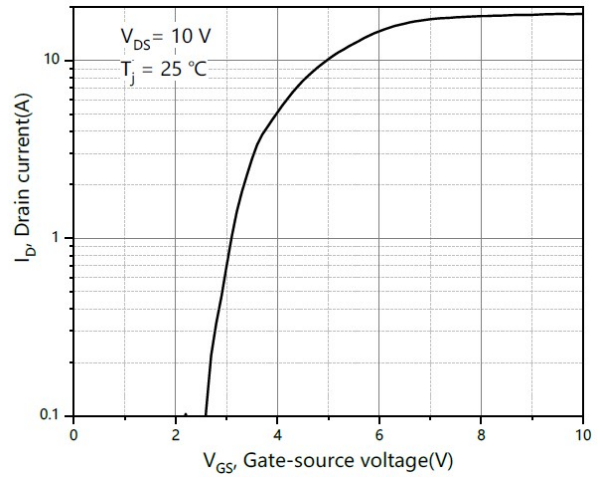


Figure2. Transfer Characteristics

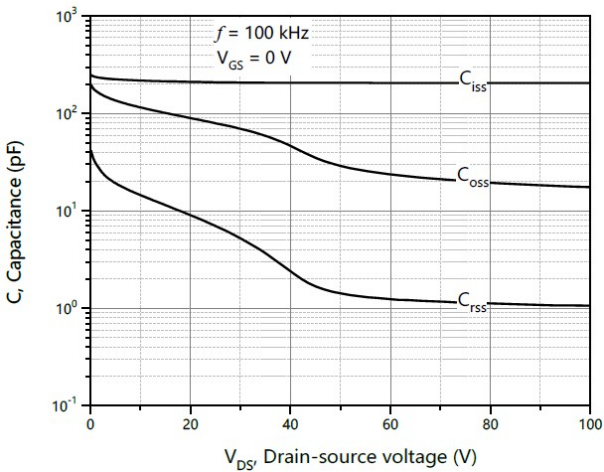


Figure3. Capacitance Characteristics

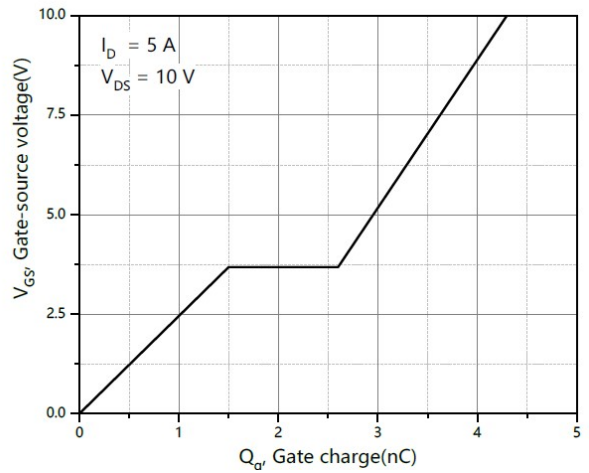


Figure4. Gate Charge

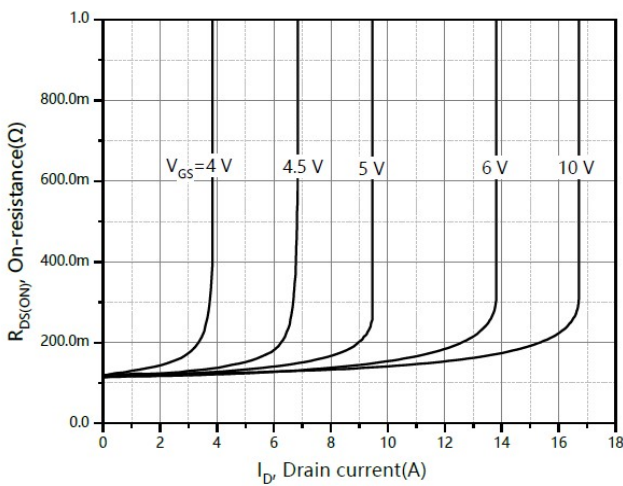


Figure5. : On-Resistance vs. Drain Current and Gate Voltage

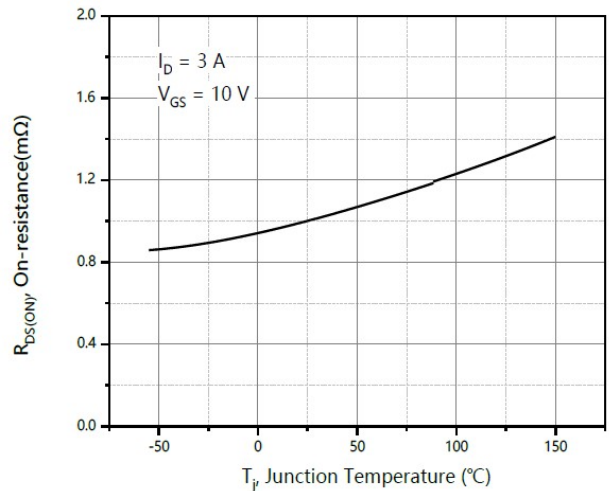


Figure6. Normalized On-Resistance

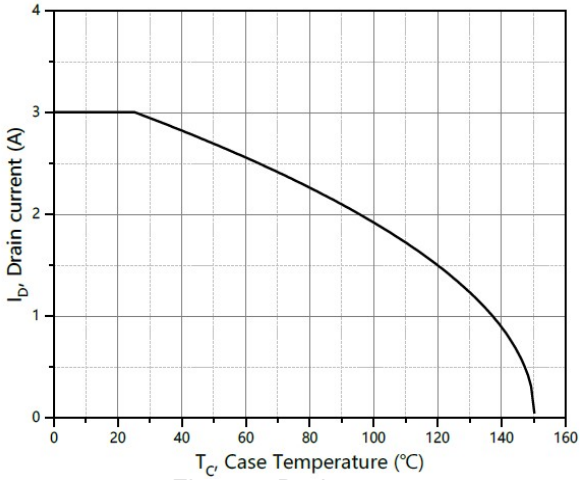


Figure7. Drain current

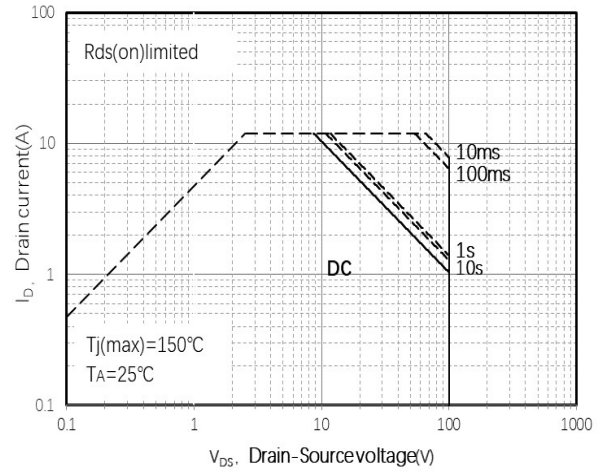


Figure8.Safe Operation Area

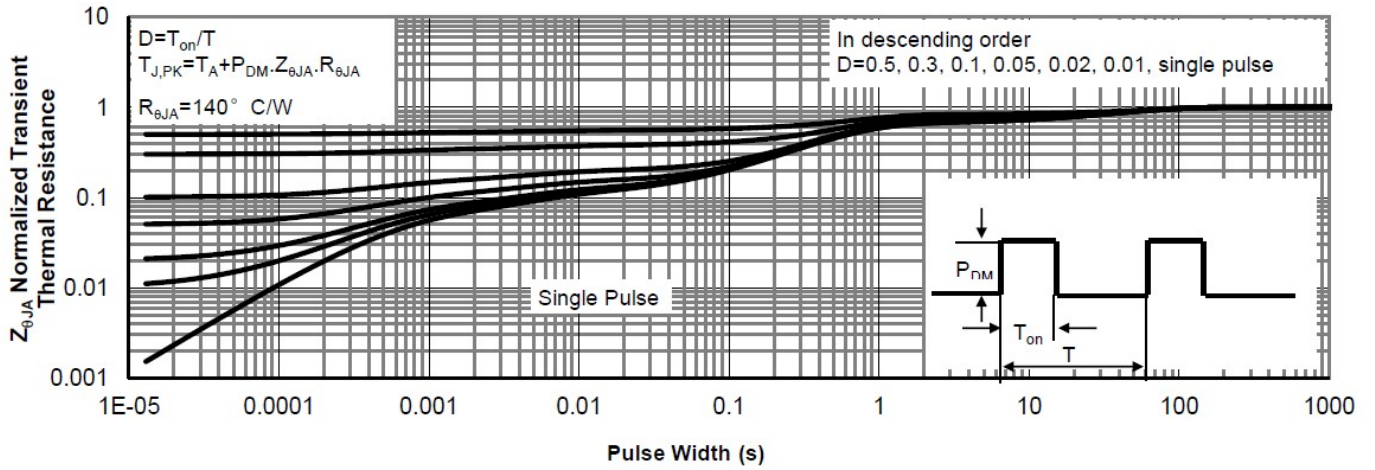
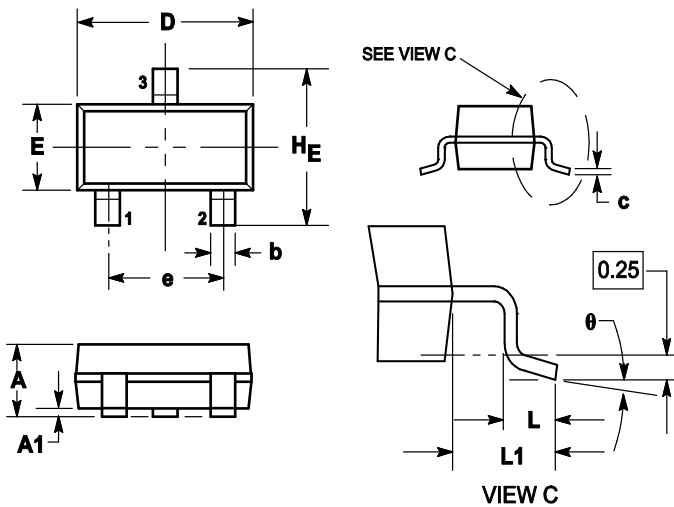


Figure9.Normalized Maximum Transient thermal impedance

OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H _E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

SOLDERING FOOTPRINT

