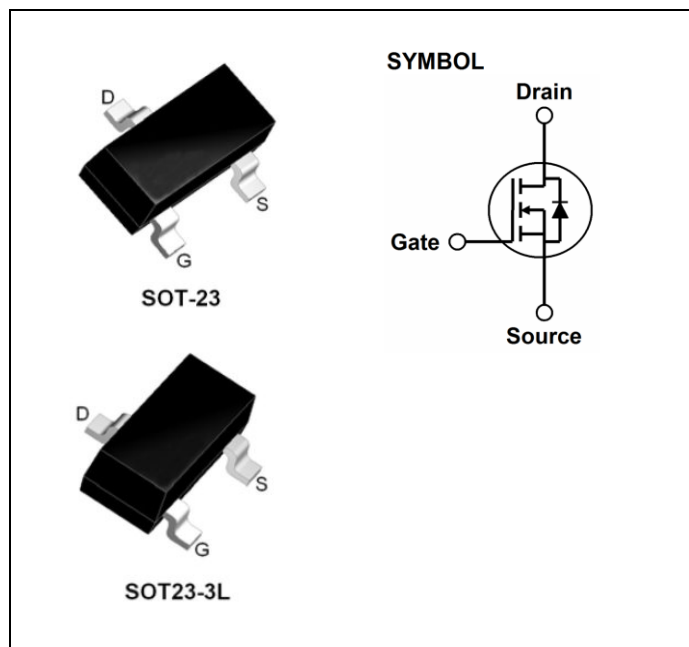


N-CHANNEL ENHANCEMENT MODE MOSFET



FEATURES

- $R_{DS(ON)} = 50 \text{ m}\Omega$ (TYP.) @ $V_{GS} = 4.5\text{V}$
 $R_{DS(ON)} = 65 \text{ m}\Omega$ (TYP.) @ $V_{GS} = 2.5\text{V}$
 $R_{DS(ON)} = 120 \text{ m}\Omega$ (TYP.) @ $V_{GS} = 1.8\text{V}$
- Super High Dense Cell Design
- Reliable And Rugged
- Lead Free And Green Devices Available (RoHS Compliant)

MECHANICAL DATA

- Available in SOT-23, SOT-23-3L Package
- Solderability : MIL-STD-202, Method 208
- Full RoHS Compliance

ORDERING INFORMATION

Part Number	Package	Shipping	Marking Code
LS2302N□-T3R	SOT-23	Tape Reel	S2
LS2302N□-T3LR	SOT-23-3L	Tape Reel	

Notes:

1. □: none is for Lead Free package;
"G" is for Halogen Free package.

THERMAL DATA

PARAMETER	SYMBOL	VALUES	UNIT
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	150	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	80	$^{\circ}\text{C/W}$

Notes:

2. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. The value of $R_{\theta JA}$ is measured with device mounted on 1 in² FR-4 board with 2 oz copper.

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

PARAMETER	SYMBOL	RATING	UNIT
DRAIN-SOURCE VOLTAGE	V _{DSS}	20	V
GATE-SOURCE VOLTAGE	V _{GSS}	±12	V
CONTINUOUS DRAIN CURRENT ^(Note 3)	V _{GS} = 4.5V	I _D	3.0
PULSED DRAIN CURRENT ^(Note 3)		I _{DM}	10
DIODE CONTINUOUS FORWARD CURRENT	I _S	1.0	A
POWER DISSIPATION ^(Note 3)	T _A =25°C	P _D	0.83
	T _A =100°C	P _D	0.3
JUNCTION TEMPERATURE	T _J	150	°C
STORAGE TEMPERATURE RANGE	T _{stg}	- 55 ~ +150	°C

Note: 3.SURFACE MOUNTED ON 1 in² PAD AREA, t ≤ 10 SEC.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

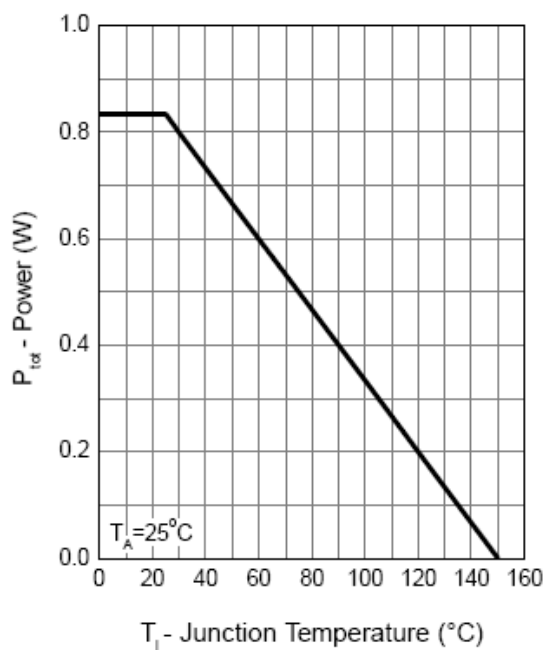
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	V _{BDSS}	V _{GS} = 0V, I _{DS} = 250 μA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.5	0.7	1.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±10V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1.0	μA
		V _{DS} = 16V, V _{GS} = 0V, T _J = 85°C			30	
Drain-Source On-State Resistance ^(Note 2)	R _{DS(on)}	V _{GS} = 4.5V, I _D = 3A		50	65	mΩ
		V _{GS} = 2.5V, I _D = 2A		65	90	
		V _{GS} = 1.8V, I _D = 0.5A		120	200	
Diode Forward Voltage ^(Note 4)	V _{SD}	I _{SD} = 1A, V _{GS} = 0V		0.7	1.3	V
DYNAMIC CHARACTERISTICS ^(Note 5)						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz		320		pF
Output Capacitance	C _{oss}			70		
Reverse Transfer Capacitance	C _{rss}			50		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		5		Ω
Total Gate Charge	Q _g	V _{DS} = 10V, V _{GS} = 4.5V, I _{DS} = 3A		4.4	6	nC
Gate-Source Charge	Q _{gs}			0.5		
Gate-Drain Charge	Q _{gd}			1.6		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 10V, V _{GEN} = 4.5V, R _L = 10Ω, R _G = 6Ω, I _{DS} = 1A		4	8	nS
Rise Time	t _r			14	26	
Turn-Off Delay Time	t _{d(off)}			21	39	
Fall Time	t _f			5	10	
Reverse Recovery Time	t _{rr}	I _{SD} =3A, dI _{SD} /dt = 100A/ μS		15		nS
Reverse Recovery Charge	Q _{rr}			6		nC

Note: 4.Pulse Test; Pulse Width ≤ 300μS, Duty Cycle ≤ 2%

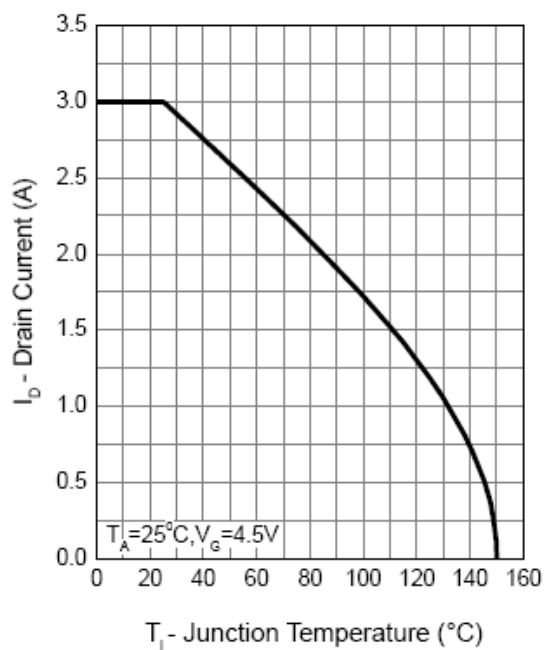
5. Guaranteed by Design, Not Subject To Production Testing

ELECTRICAL CHARACTERISTICS CURVES

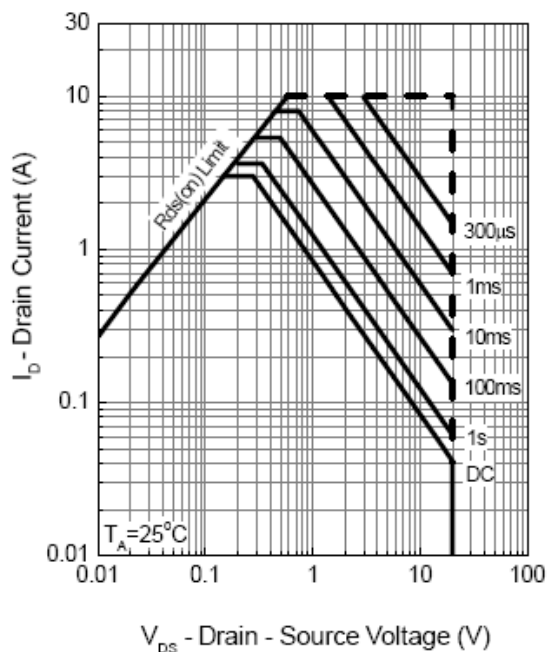
Power Dissipation



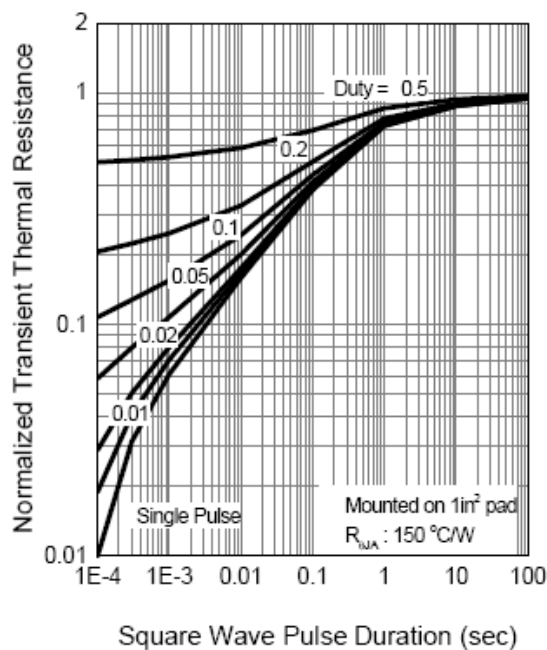
Drain Current



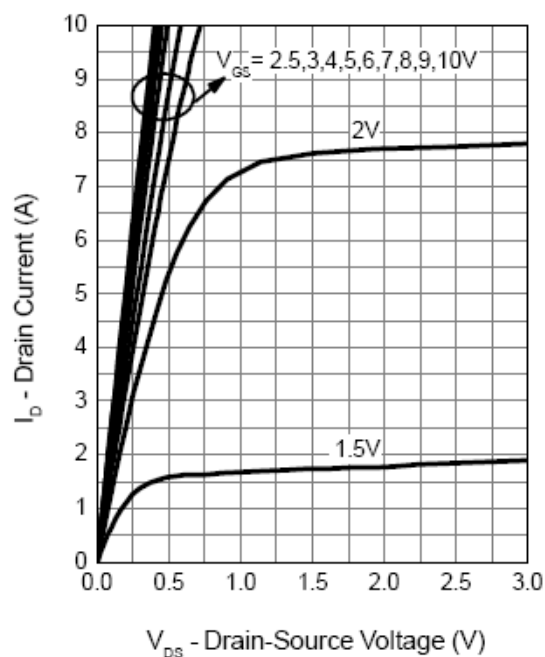
Safe Operation Area



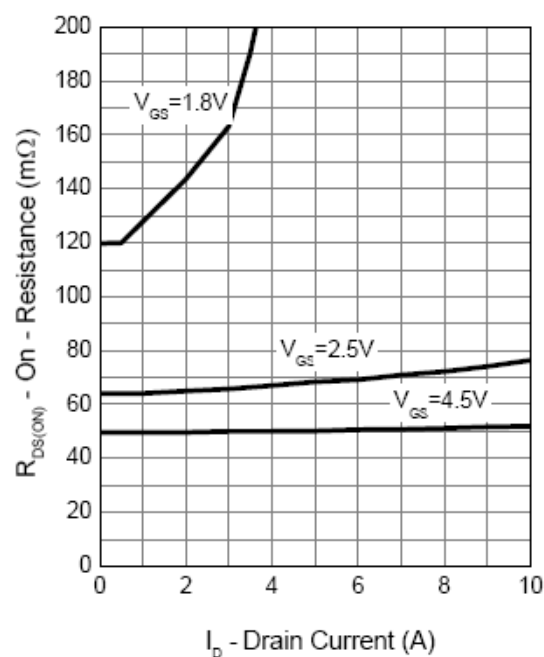
Thermal Transient Impedance



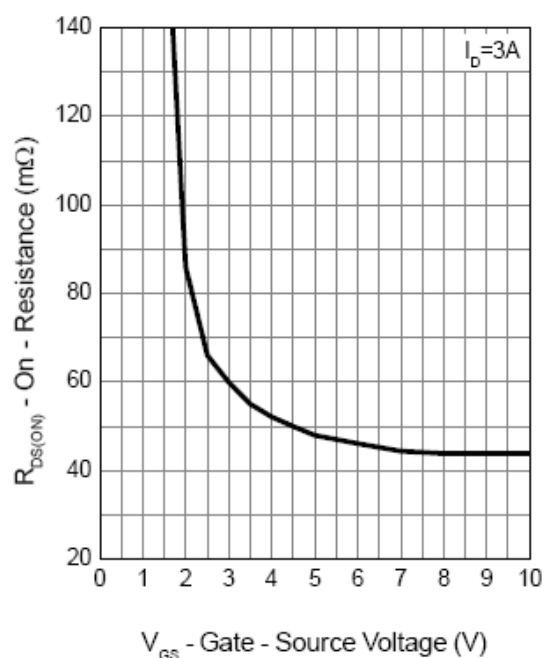
Output Characteristics



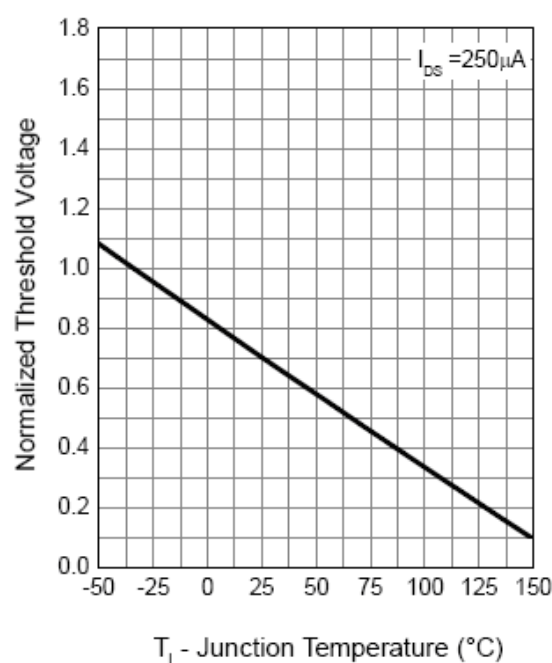
Drain-Source On Resistance



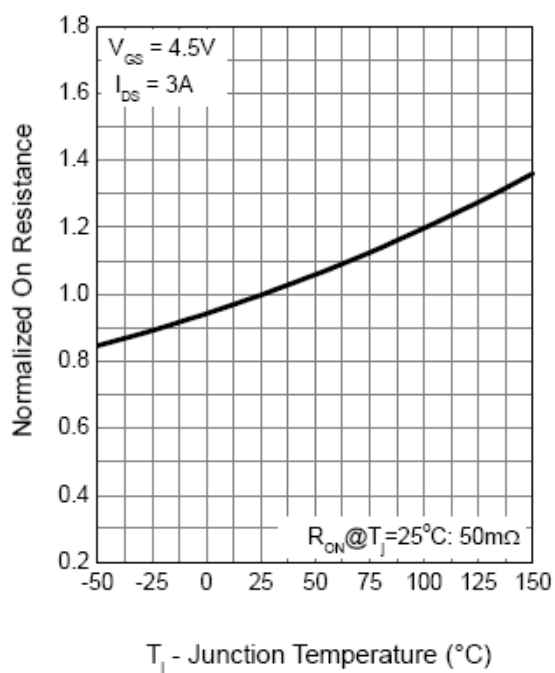
Drain-Source On Resistance



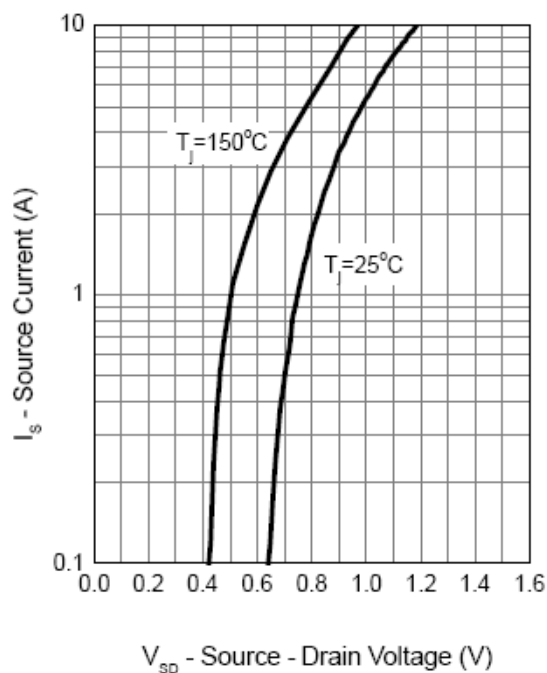
Gate Threshold Voltage



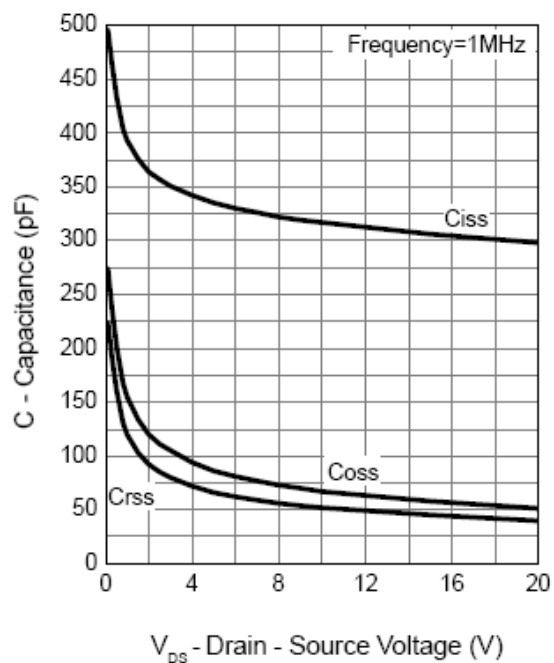
Drain-Source On Resistance



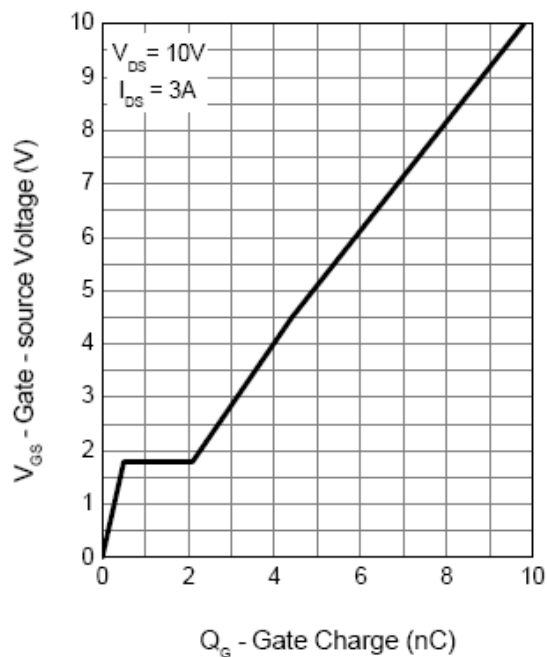
Source-Drain Diode Forward



Capacitance



Gate Charge



PHYSICAL DIMENSION

Unit : Inch (Millimeter)

