

N-Channel Enhancement Mode Field Effect Transistor

General Description

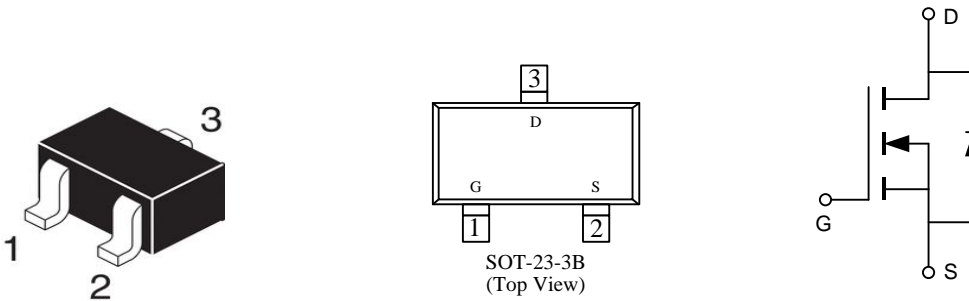
Product Summary		
V_{DSS}	I_D	$R_{DS(ON)}(m\Omega)TYP$
20V	0.65A	130 @ $V_{GS}= 4.5V$
	0.55A	160 @ $V_{GS}= 2.5V$

Features

- Super high dense cell design for low $R_{DS(ON)}$
- Rugged and reliable
- Simple drive requirement
- SOT-23-3B package

Package

- SOT-23-3B



Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
LN2306	-55°C to +150°C	SOT-23-3B	3000

Absolute Maximum Ratings

($T_A=25^\circ\text{C}$ unless otherwise noted)

parameter	symbol	limit	unit	
Drain-source voltage	V_{DSS}	20	V	
Gate-source voltage	V_{GSS}	± 8	V	
Coutinuous drain current ($T_j=150^\circ\text{C}$)	I_D	$T_A=25^\circ\text{C}$	1.30	A
		$T_A=80^\circ\text{C}$	0.90	A
Pulsed drain current	I_{DM}	2.0	A	
Drain-source Diode forward current	I_S	0.6	A	
Power dissipation	P_D	$T_A=25^\circ\text{C}$	0.27	W
		$T_A=70^\circ\text{C}$	0.16	
Operating junction Temperature range	T_j	-55—150	$^\circ\text{C}$	

Electrical Characteristics

(TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35		1.0	V
Gate leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
		$V_{DS}=20V, V_{GS}=0V$ $T_J=55^\circ C$			5	
On-state drain current	$I_{D(ON)}$	$V_{DS} \geq 4.5V, V_{GS}=5V$	1.4			A
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.65A$		0.13	0.19	Ω
		$V_{GS}=2.5V, I_D=0.55A$		0.16	0.23	
		$V_{GS}=1.8V, I_D=0.45A$		0.21	0.40	
Forward transconductance	g_{fs}	$V_{DS}=10V, I_D=0.4A$		1.0		S
Diode forward voltage	V_{SD}	$I_S=0.15A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Total gate charge	Q_g	$V_{DS}=10V$ $I_D=0.6A$ $V_{GS}=4.5V$		1.2	1.5	nC
Gate-source charge	Q_{gs}			0.2		
Gate-drain charge	Q_{gd}			0.3		
Turn-on delay time	$t_{d(ON)}$	$V_{DD}=10V$ $V_{GEN}=4.5V$ $I_D=0.5A$ $R_L=10\Omega$ $R_G=6\Omega$		5	10	ns
Rise time	t_r			8	15	
Turn-off delay time	$t_{d(OFF)}$			10	18	
Fall time	t_f			1.2	2.8	

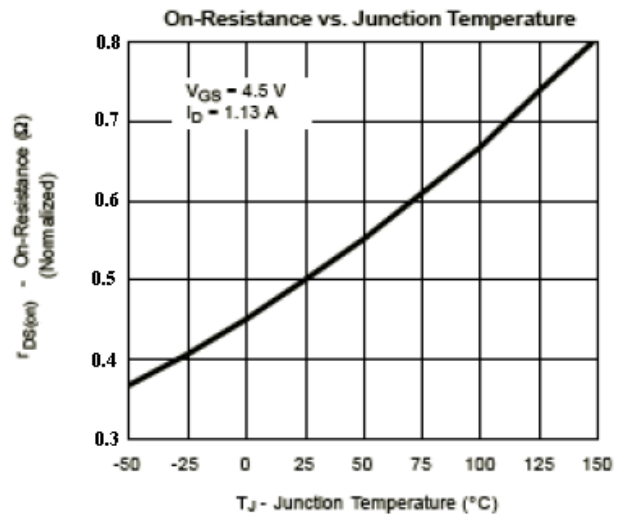
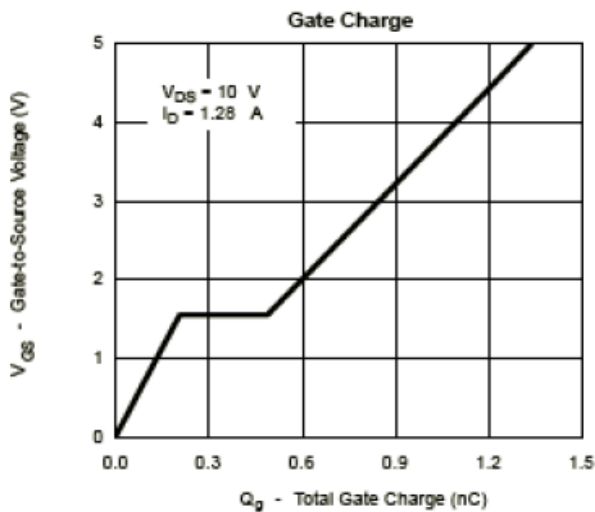
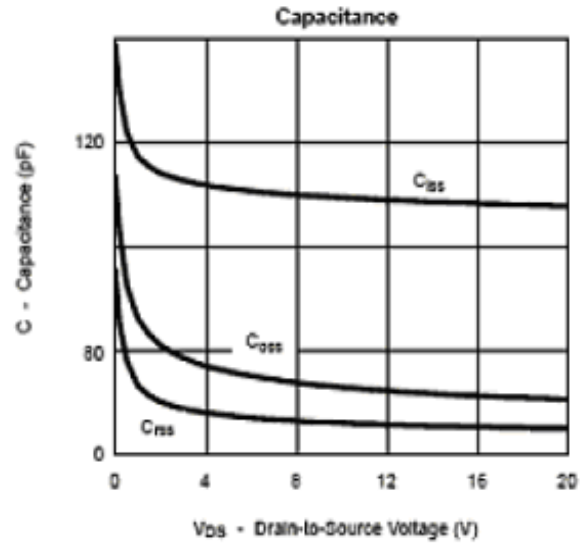
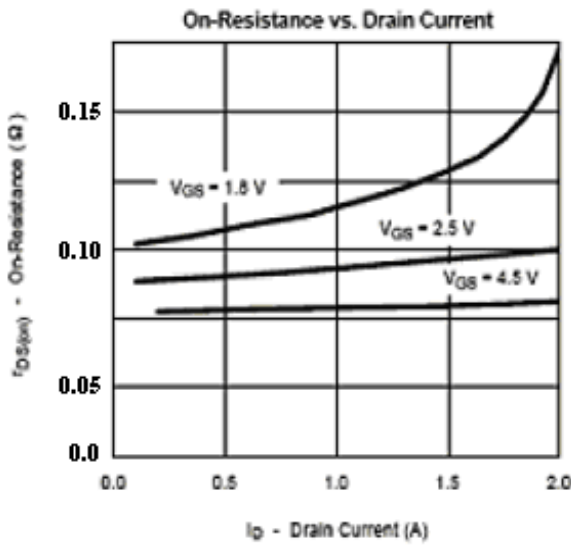
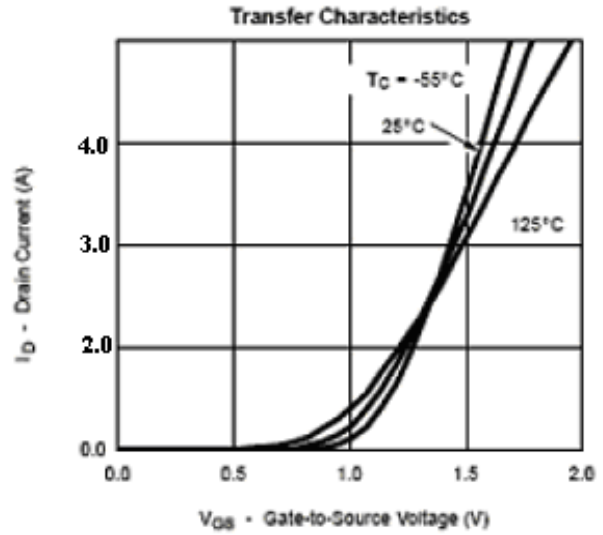
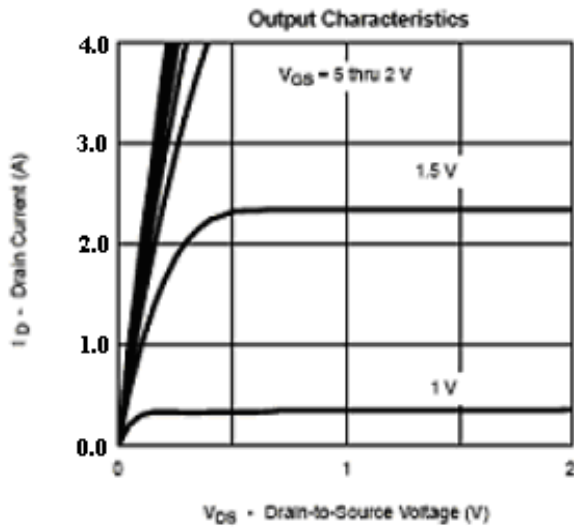
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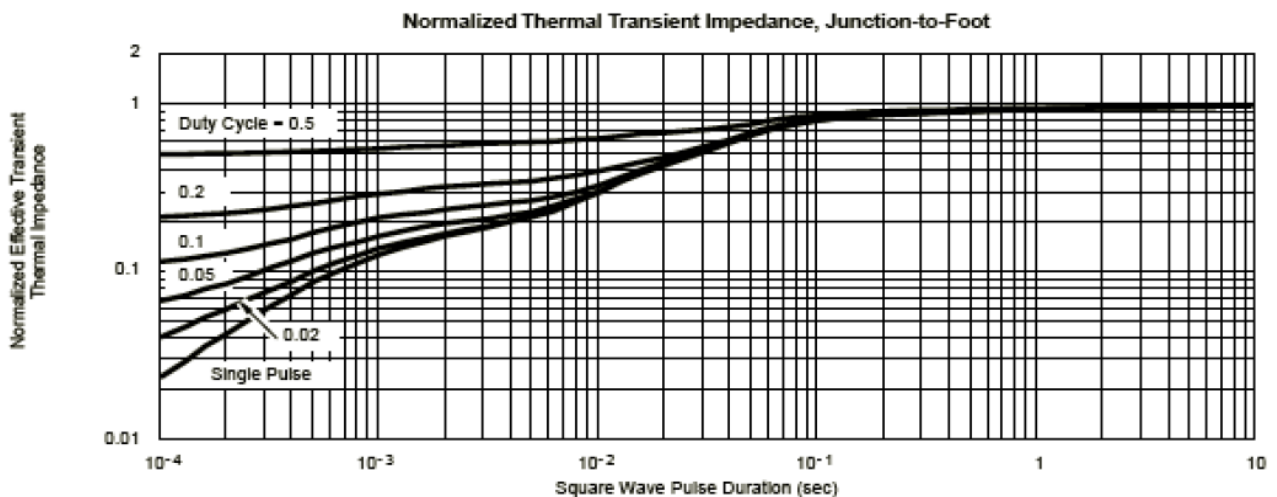
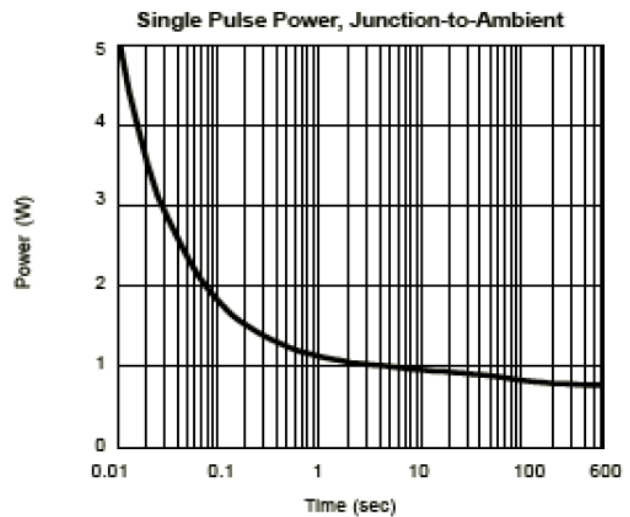
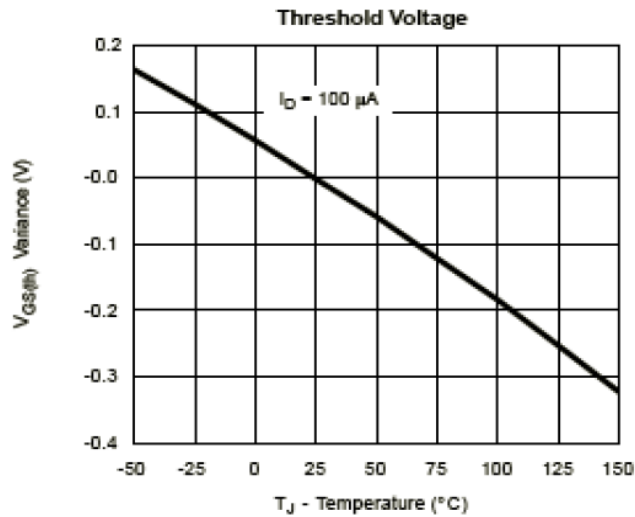
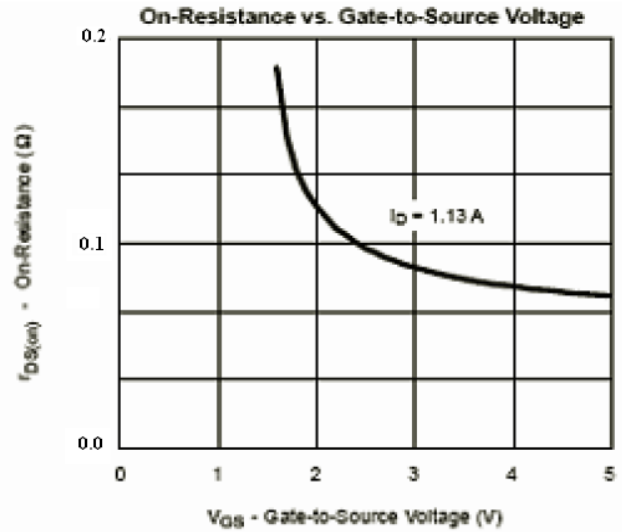
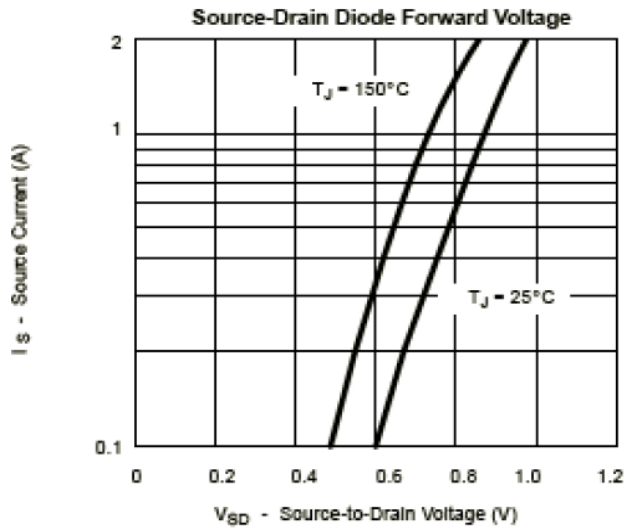
- surface mounted on FR4 board, $t_s \leq 10\text{sec}$
- pulse test: pulse width $\leq 300\mu s$, duty $\leq 2\%$
- guaranteed by design, not subject to production testing

Thermal Characteristics

Thermal Resistance junction-to ambient	$R_{th JA}$	100	$^\circ C/W$
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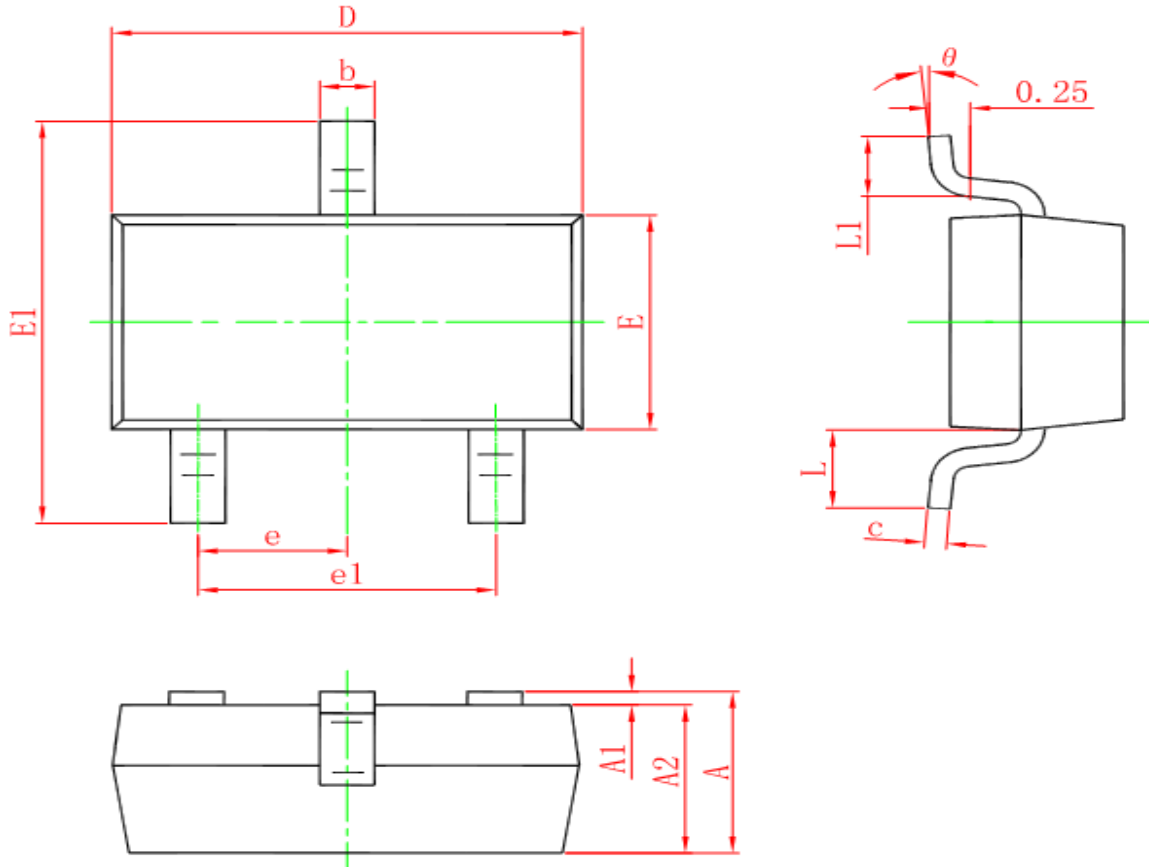
Typical Performance Characteristics





■ Package Information

- SOT-23-3B



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°