MSP2301N3

20V P-CHANNEL Enhancement Mode MOSFET

Features

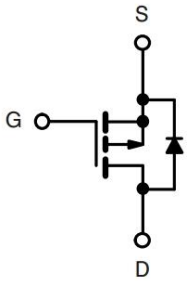
- VDS=-20V RDS(ON)=130mΩ@VGS=-4.5V, IDS=-2.8A RDS(ON)=190mΩ@VGS=-2.5V, IDS=-2A
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-23 package
- RoHS compliant package

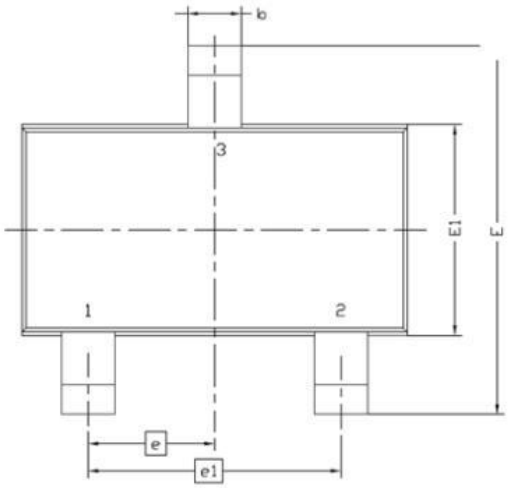
Packing & Order Information

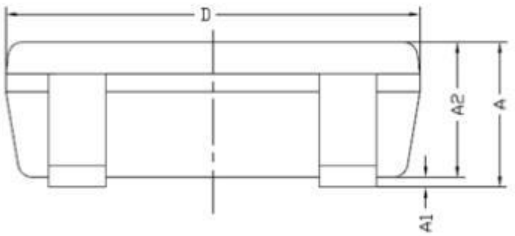
3,000/Reel

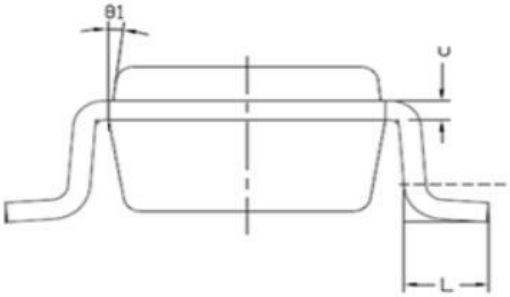
RoHS
COMPLIANT

Graphic symbol









Symbol	MILLIMETERS	
	MIN	MAX
A	0.8	1.2
A1	0	0.1
A2	0.7	1.1
b	0.3	0.5
c	0.1	0.2
D	2.7	3.1
E	2.6	3
E1	1.4	1.8
e	0.95 BSC	
e1	1.9 BSC	
L	0.3	0.6
θ1	7° NOM	

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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (T_A=25˚C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D	Drain Current -Continuous	-2.3	A
I_{DM}	Pulsed Drain Current	-10	A
P_D	Total Power Dissipation (T_A=25°C)	1.25	W
	Total Power Dissipation (T_A=70°C)	0.8	W
T_J	Operating Junction Temperature	-55 to +150	°C
T_{STG}	Storage Temperature	-55 to +150	°C

Thermal Performance

Symbol	Parameter	Max.	Units
Rthja	Thermal Resistance, Junction-to- Ambient (PCB mounted)	100	°C/W
T_L	Lead Temperature, for 5 second soldering (1/8" from case)	260	°C

Note: Surface mounted on FR-4 board, t<=5 sec

Static

Symbol	Test Conditions	Min	Typ.	Max.	Units
BV_{DSS}	V_{GS} = 0 , I_D = 250μA	-20	--	--	V
$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	-0.45	--	--	V
I_{DSS}	V_{DS} = -16 V , V_{GS} = 0 V	--	--	-1	μA
I_{GSS}	V_{GS} = ±8 V , V_{DS} = 0 V	--	--	±100	nA
*$I_{D(ON)}$	V_{DS} ≧ -10 V , V_{GS} = -5 V	-6	--	--	A
*$R_{DS(ON)}$	V_{GS} = -4.5 V,I_D = -2.8 A V_{GS} = -2.5 V,I_D = -2 A	--	95 122	130 190	mΩ
*G_{FS}	V_{DS} = 5 V,I_D = -2.8 A		6.5		S

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Dynamic Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
C_{ISS}	Input Capacitance	V_{DS} = -6 V, V_{GS} = 0 V, f = 1.0MHz	--	447	--	pF
C_{OSS}	Output Capacitance		--	127	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	80	--	pF
Q_g	Total Gate Charge	V_{DS} = -6 V , I_D = -2.8 A, V_{GS} = -4.5 V	--	5.4	10	nC
Q_{gs}	Gate-Source Charge		--	0.8	--	nC
Q_{gd}	Gate-Drain Charge		--	1.1	--	nC
$t_{d(on)}$	Turn-On Dalay Time	V_{DD} = 6 V , I_D = -1 A, R_L = 6 Ω, V_{GEN} = -4.5 V R_{GEN} = 6 Ω	--	5	60	ns
t_r	Rise Time		--	19	110	ns
$t_{d(off)}$	Turn-Off Dalay Time		--	95	80	ns
tf	Fall Time		--	65	10	ns

Static					
Symbol	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
I_{SD}	-	--	--	1.6	A
V_{SD}	V_{GS} = 0 V , I_{SD} = -1.6 A	--	-0.8	-1.2	V

Notes: Pulse test: PW <= 300us duty cycle <= 2%.

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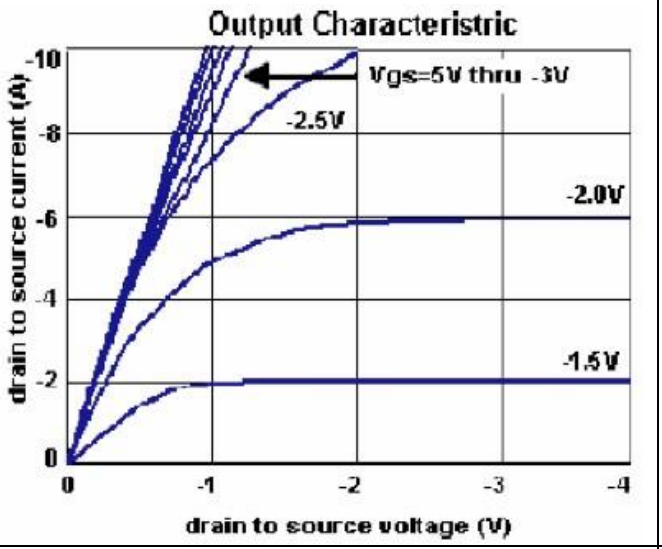
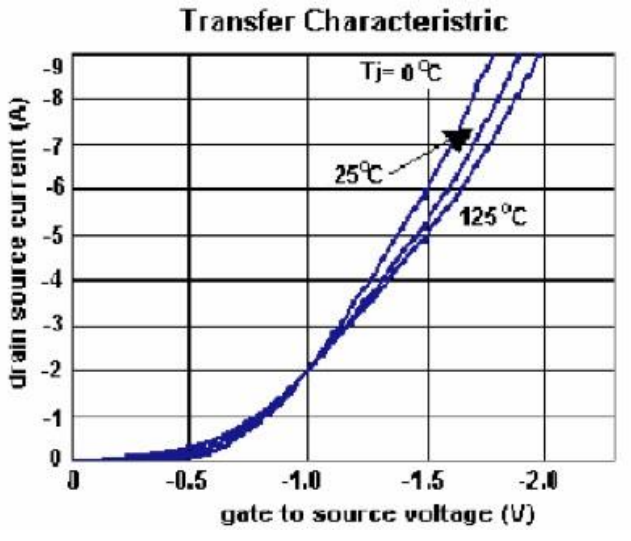
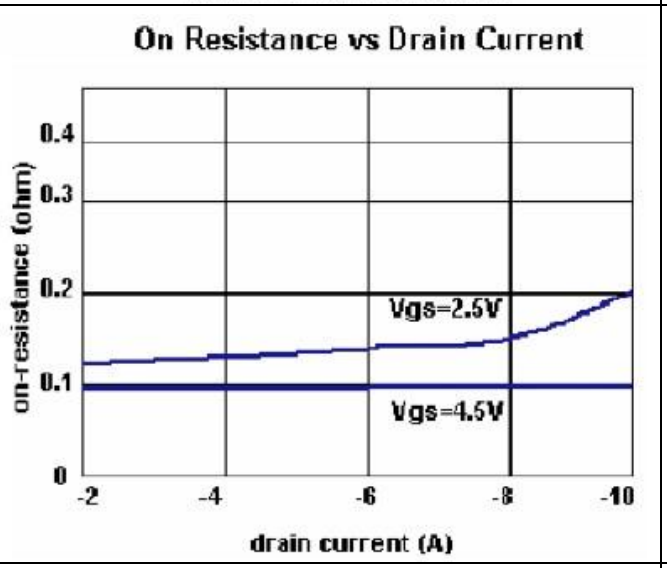
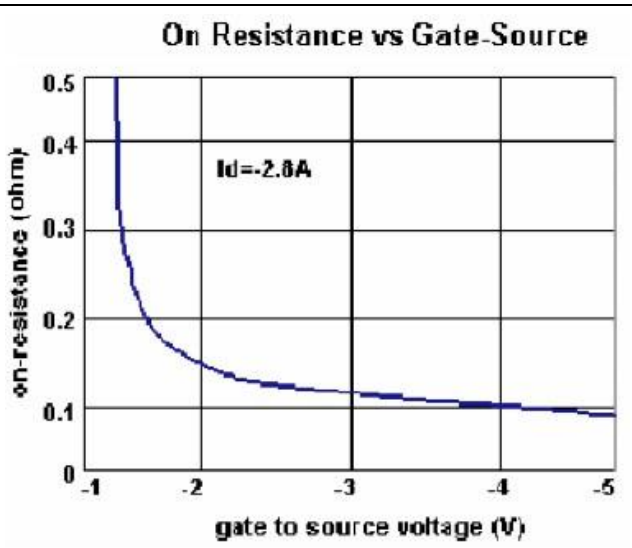
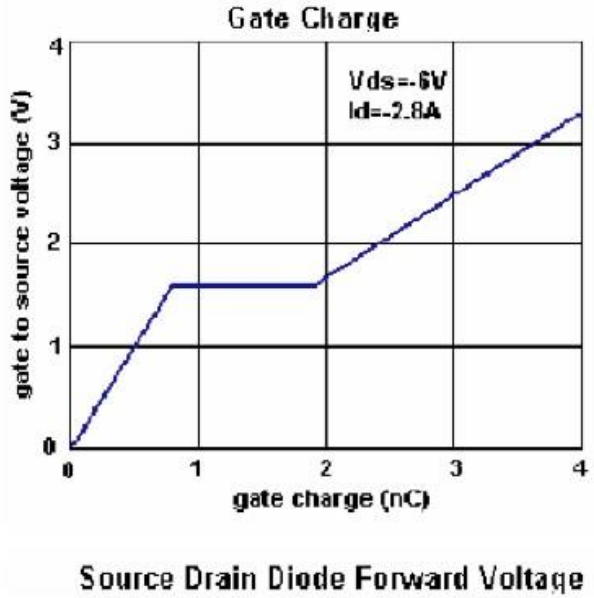
■Typical Characteristics



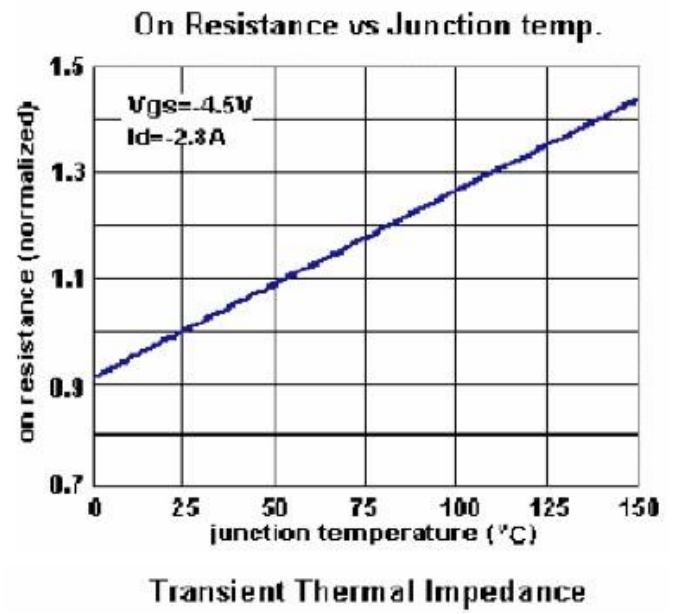








Source Drain Diode Forward Voltage



Transient Thermal Impedance

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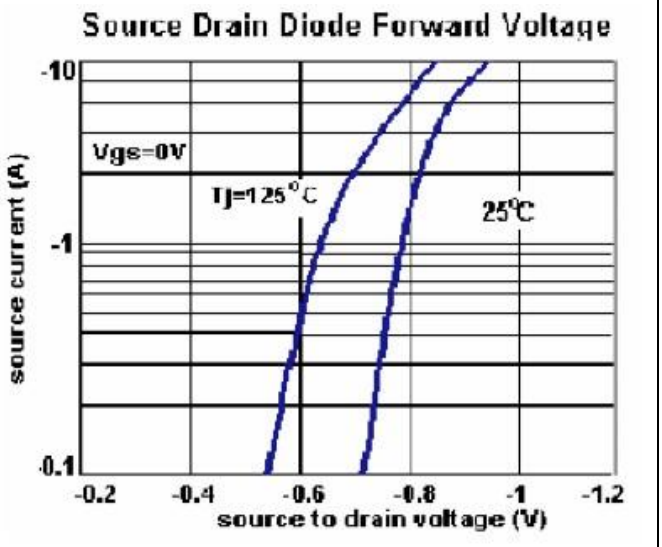
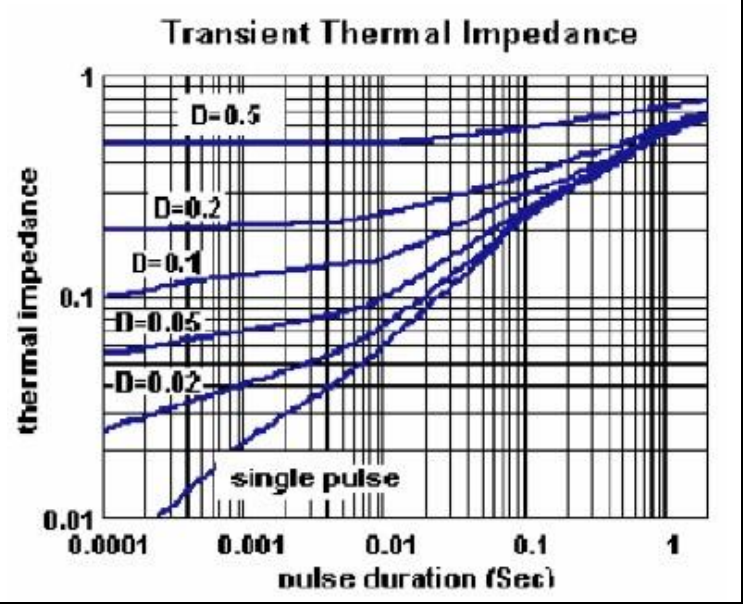
■Typical Characteristics





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