

DATA SHEET

PS3400N

N-CHANNEL HIGH DENSITY TRENCH MOSFET

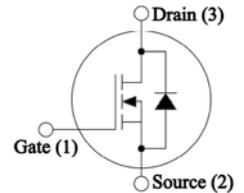
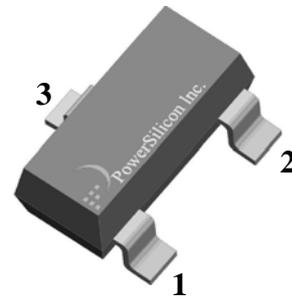
VOLTAGE 30 V **CURRENT** 5.8 A

FEATURES

- LOW $R_{DS(ON)}$: (28m Ω @ $V_{GS}=4.5V$, $I_D=5A$,
38m Ω @ $V_{GS}=2.5V$, $I_D=4.0A$)
- RELIABLE AND RUGGED
- LEAD FREE AND HALOGEN-FREE

MECHANICAL DATA

- CASE: SOT-23-3L PLASTIC CASE
- TERMINALS: SOLDERABLE PER MIL-STD-202, METHOD208



CASE : SOT-23-3L

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0$)	V_{DS}	30	V
Gate- source Voltage	V_{GS}	± 12	V
Continuous Drain Current at $T_C = 25^\circ\text{C}$ (Note.1)	I_D	5.8	A
Continuous Drain Current at $T_C = 100^\circ\text{C}$	I_D	5.0	A
Pulsed Drain Current (Note.2)	I_{DM}	30	A
Total Dissipation at $T_C = 25^\circ\text{C}$	P_{tot}	1.4	W
Max. Thermal Resistance Junction-Ambient	$R_{\theta JA}$	90	$^\circ\text{C} / \text{W}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$
Max. Operating Junction Temperature	T_J		

Note:

1. Current limited by package
2. Pulse width limited by safe operating area

ELECTRICAL CHARACTERISTICS (T_{case}= 25°C unless otherwise specified)
OFF

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	I _D = 250 uA , V _{GS} = 0	Bvdss	30	-	-	V
Zero Gate Voltage Drain Current (V _{GS} = 0)	V _{DS} = 30V	I _{dss}	-	-	1	uA
Current (V _{DS} = 0)	V _{GS} = ±12V	I _{gss}	-	-	±100	nA

ON

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	V _{GS(th)}	0.5	0.8	1.1	V
Static Drain-source On Resistance	V _{GS} = 4.5V, I _D = 5A	R _{DS(on)}	-	22	28	mΩ
	V _{GS} = 2.5V, I _D = 4.0A		-	28	38	mΩ

DYNAMIC

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Forward Tran conductance	V _{DS} = 5V, I _D = 5.8A	G _{fs}	-	33	-	S
Input Capacitance	V _{DS} = 15V, f = 1 MHz, V _{GS} = 0	C _{iss}	-	630	-	pF
Output Capacitance		C _{oss}	-	76	-	pF
Reverse Transfer Capacitance		C _{rss}	-	55	-	pF

SWITCHING ON

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Turn-on Delay Time	V _{DS} = 15V , I _D = 5.5A , R _G = 3Ω , V _{GS} = 10V	td (on)	-	3.0	-	ns
Rise Time		tr	-	2.5	-	ns
Total Gate Charge	V _{DS} = 15V	Q _g	-	6.0	-	nc
Gate-Source Charge	I _D = 5.8A	Q _{gs}	-	1.25	-	nc
Gate-Drain Charge	V _{GS} = 4.5V	Q _{gd}	-	1.8	-	nc

SWITCHING OFF

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Turn-off Delay Time	V _{DS} = 15V , I _D = 5.5A R _G = 3Ω , V _{GS} = 10V	td (off)	-	25	-	ns
Fall Time		tf	-	4.0	-	ns

SOURCE DRAIN DIODE

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Source-drain Diode Forward Current		I _{SD}	-	-	5.8	A
Forward On Voltage	I _{SD} = 1 A , V _{GS} = 0	V _{SD}	-	0.76	1.16	V

ELECTRICAL CHARACTERISTICS

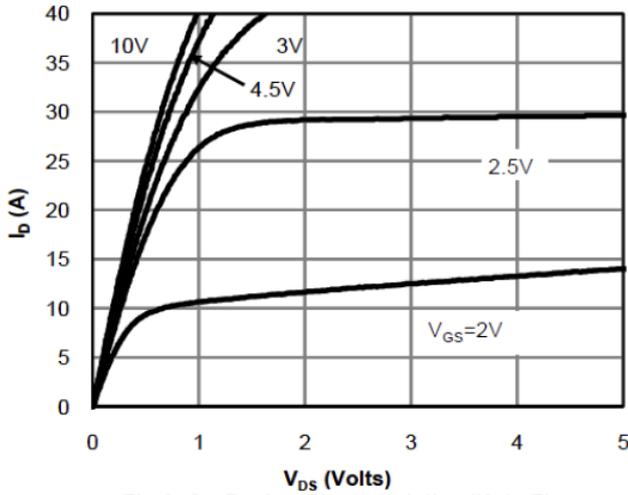


Fig 1: On-Region Characteristics (Note E)

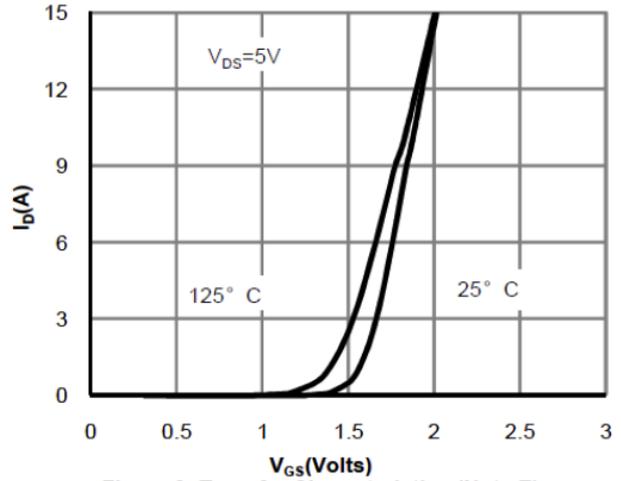


Figure 2: Transfer Characteristics (Note E)

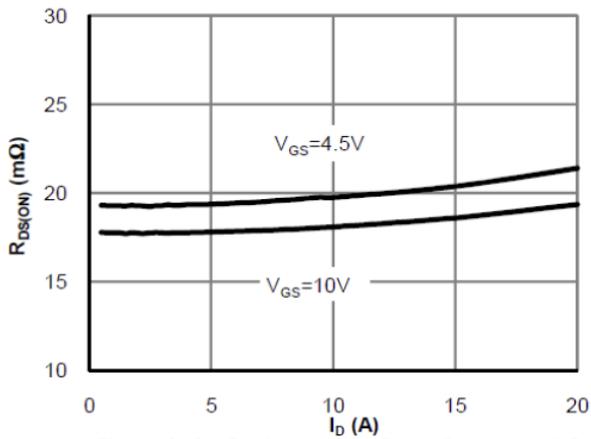


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

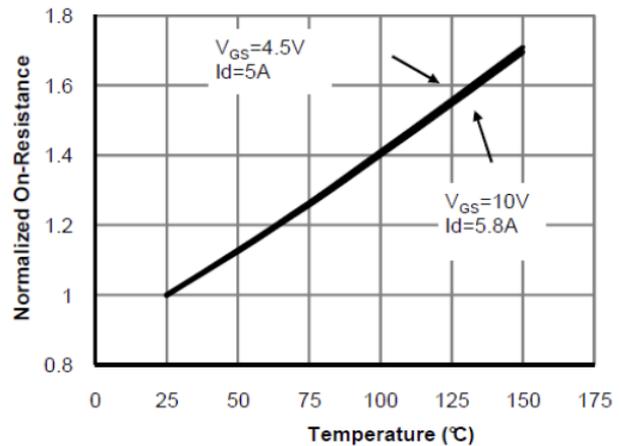


Figure 4: On-Resistance vs. Junction Temperature (Note E)

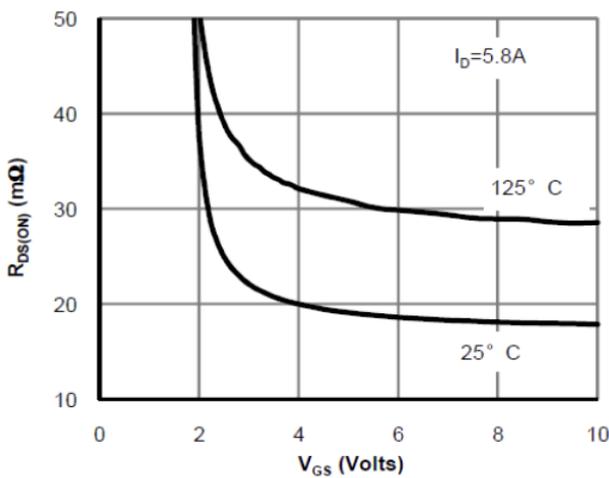


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

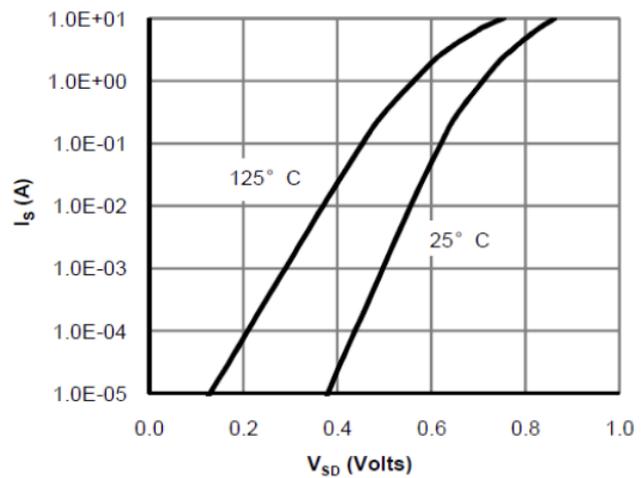
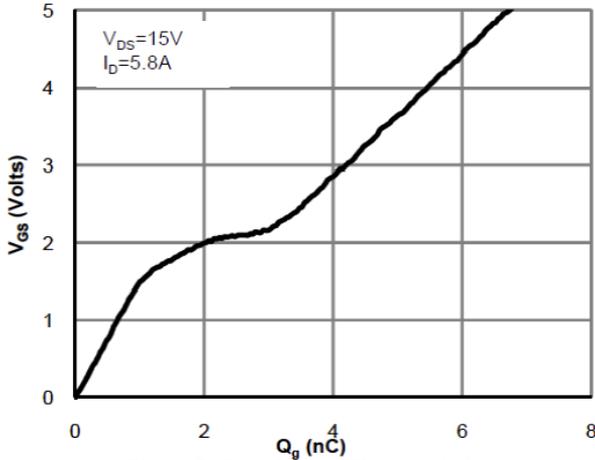
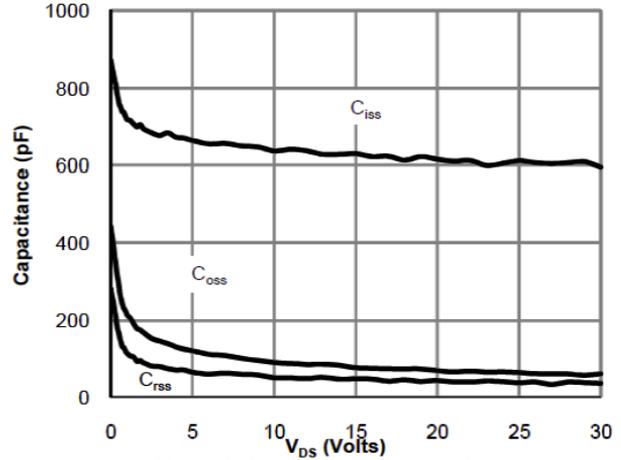
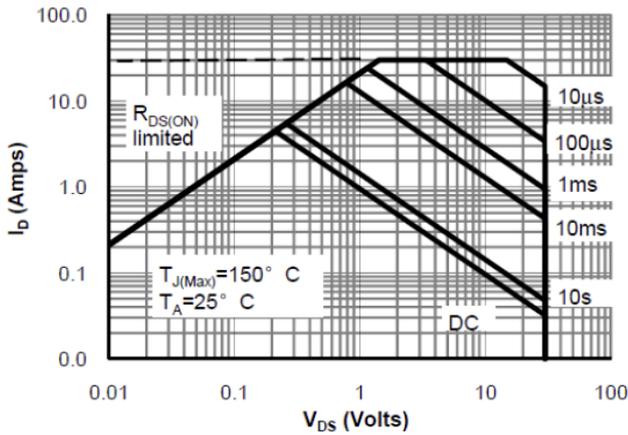
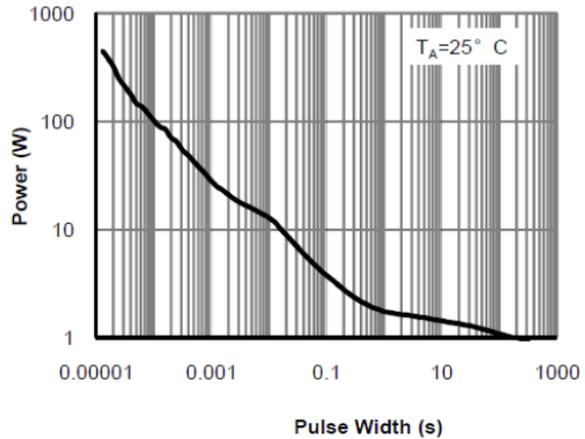
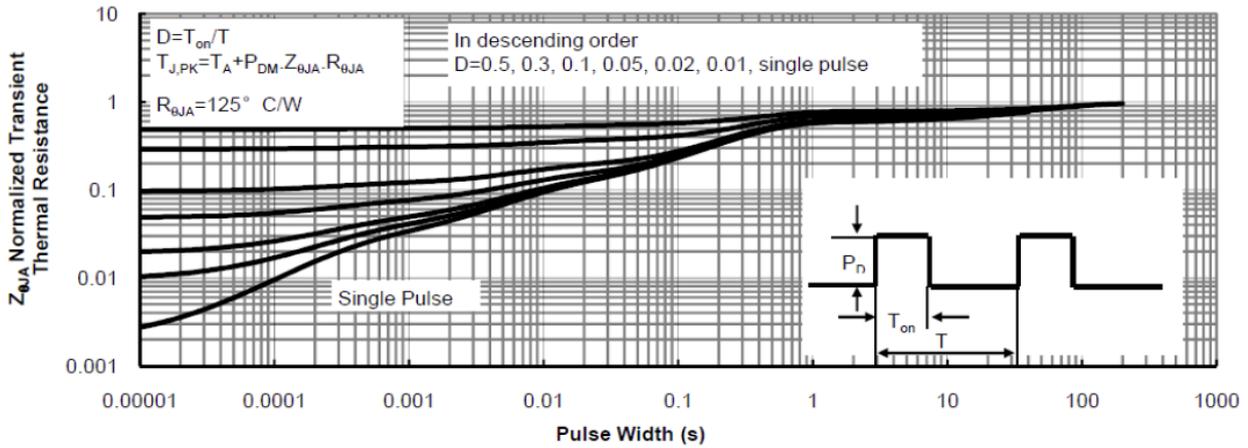
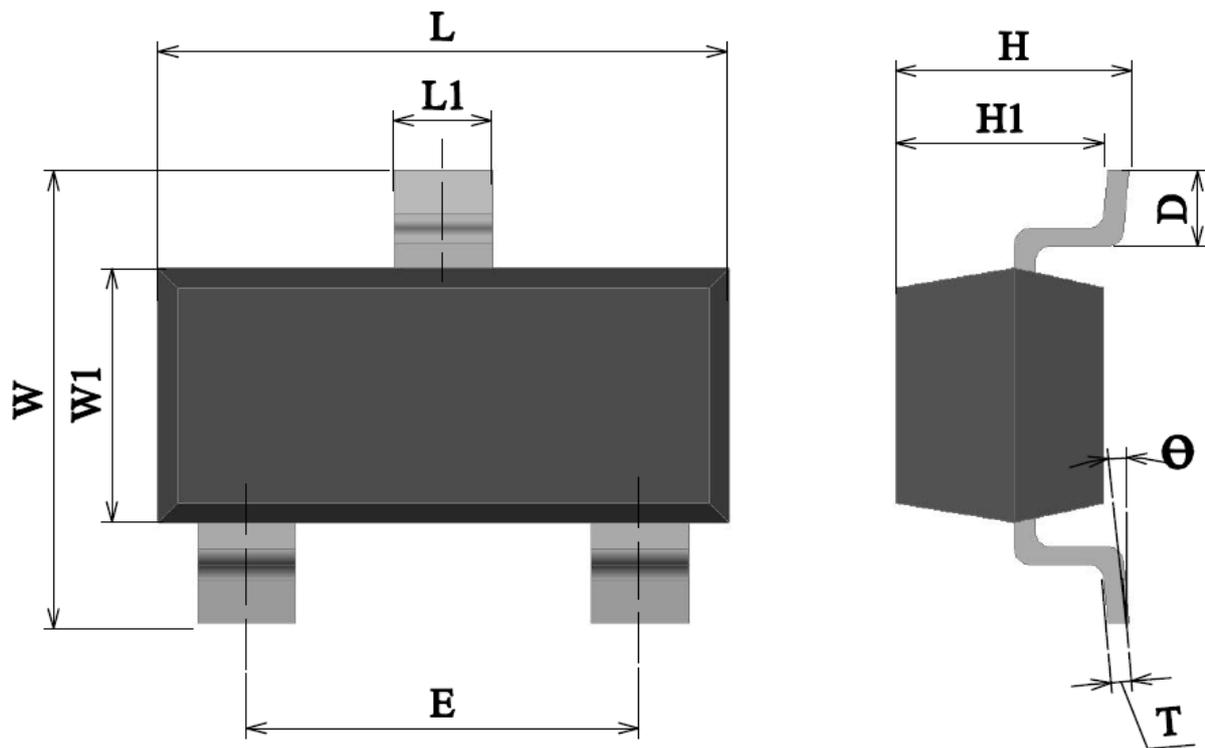


Figure 6: Body-Diode Characteristics (Note E)


Figure 7: Gate-Charge Characteristics

Figure 8: Capacitance Characteristics

Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

SOT-23-3L DIMENSION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
L	2.82	3.02	0.111	0.119
L1	0.30	0.50	0.012	0.020
W	2.65	2.95	0.104	0.116
W1	1.40	1.80	0.055	0.071
E	1.80	2.00	0.071	0.079
H	1.05	1.25	0.041	0.049
H1	1.05	1.15	0.041	0.045
D	0.30	0.60	0.012	0.024
T	0.10	0.20	0.004	0.008
θ	0°	8°	0°	8°