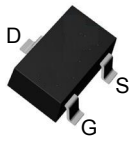
N-Channl Enhancement Mode MOSFET

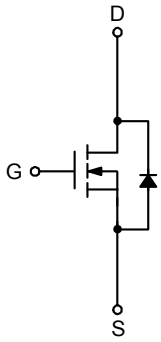
Features

- 30V/4.0A,
  $R_{DS(ON)}$=36mΩ(Typ.) @ V_{GS}=10V
  $R_{DS(ON)}$=49mΩ(Typ.) @ V_{GS}=4.5V
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



Top View of SOT-23-3



N-Channel MOSFET

Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- Load Switch

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

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current	T_A=25°C	4.0	A
		T_A=70°C	3.7	
I_{DM}	300μs Pulsed Drain Current	V_{GS}=10V	18	
I_S	Diode Continuous Forward Current		1	A
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D	Maximum Power Dissipation	T_A=25°C	1.4	W
		T_A=70°C	0.9	
$R_{\theta JA}$*	Thermal Resistance-Junction to Ambient	t ≤ 10sec	90	°C/W
		Steady state	140	

Note: *Surface Mounted on 1in^2 pad area, t ≤ 10sec.

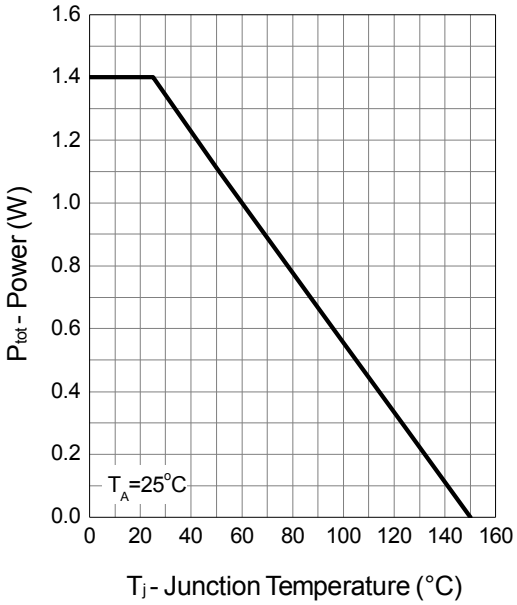
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	PW3406 Min.	PW3406 Typ.	PW3406 Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.3	1.8	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [a]	Drain-Source On-State Resistance	V_{GS}=10V, I_{DS}=4A	-	36	50	mΩ
		V_{GS}=4.5V, I_{DS}=3A	-	49	70	
Diode Characteristics						
V_{SD} [a]	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.75	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=4A, dI_{SD}/dt=100A/μs	-	10	-	ns
Q_{rr}	Reverse Recovery Charge		-	4	-	nC
Dynamic Characteristics [b]						
R_g	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	2.1	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	240	-	pF
C_{oss}	Output Capacitance		-	40	-	
C_{rss}	Reverse Transfer Capacitance		-	30	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	4.5	9	ns
T_r	Turn-on Rise Time		-	11	21	
$t_{d(OFF)}$	Turn-off Delay Time		-	11	21	
T_f	Turn-off Fall Time		-	2.6	5	
Gate Charge Characteristics [b]						
Q_g	Total Gate Charge	V_{DS}=15V, I_{DS}=4A, V_{GS}=4.5V	-	3	-	nC
		V_{DS}=15V, I_{DS}=4A, V_{GS}=10V	-	6.2	-	
Q_{gs}	Gate-Source Charge	V_{DS}=15V, V_{GS}=10V, I_{DS}=4A	-	0.8	-	
Q_{gd}	Gate-Drain Charge		-	1.6	-	
Q_{gth}	Threshold Gate Charge			3.1		

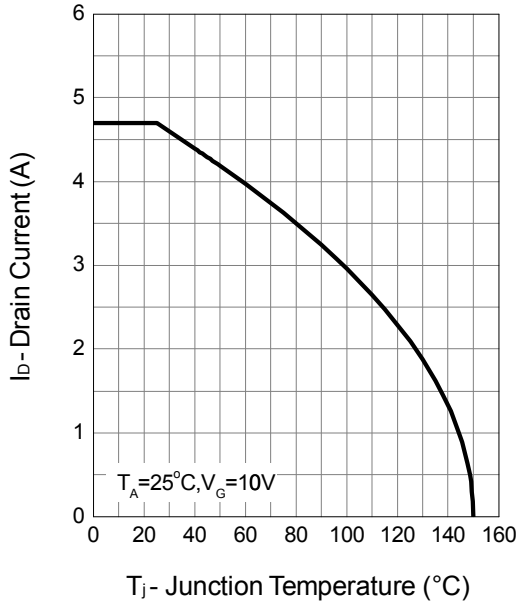
Note a: Pulse test; pulse width≤300μs, duty cycle≤2%.
Note b: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

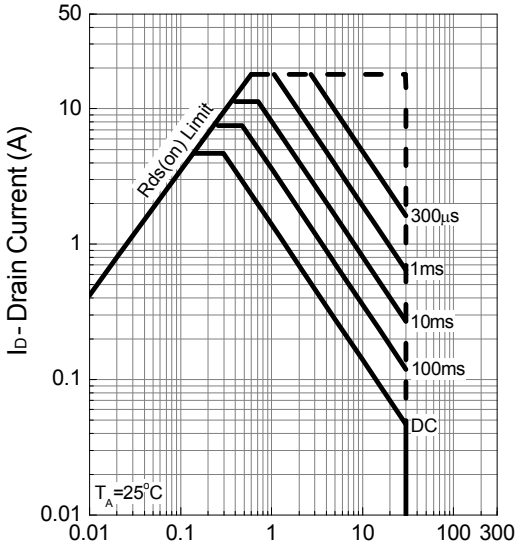
Power Dissipation



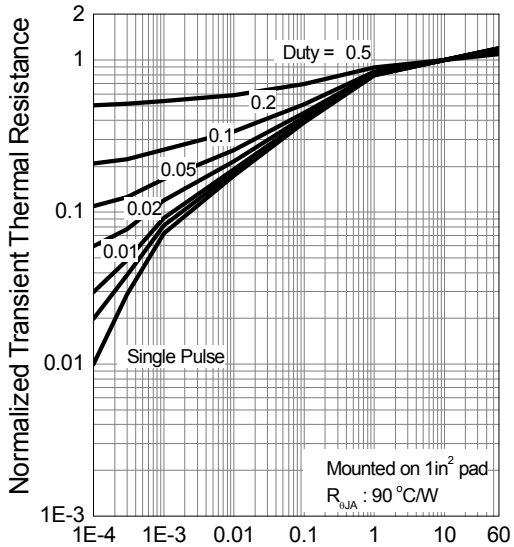
Drain Current



Safe Operation Area

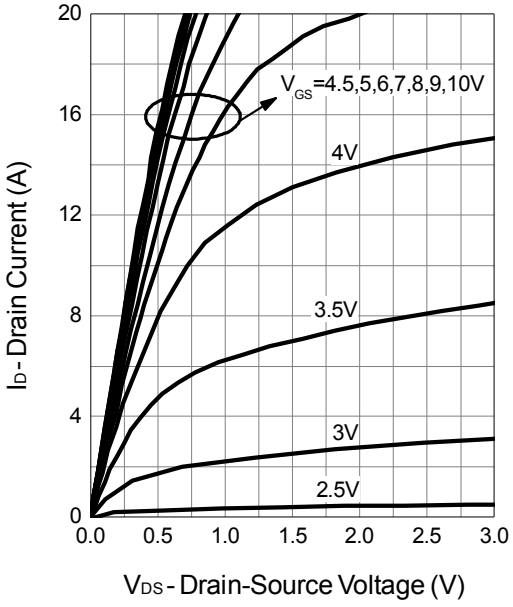


Thermal Transient Impedance

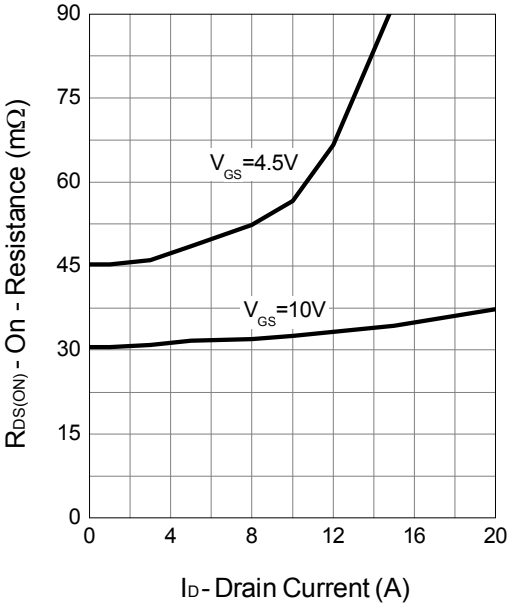


Typical Operating Characteristics (Cont.)

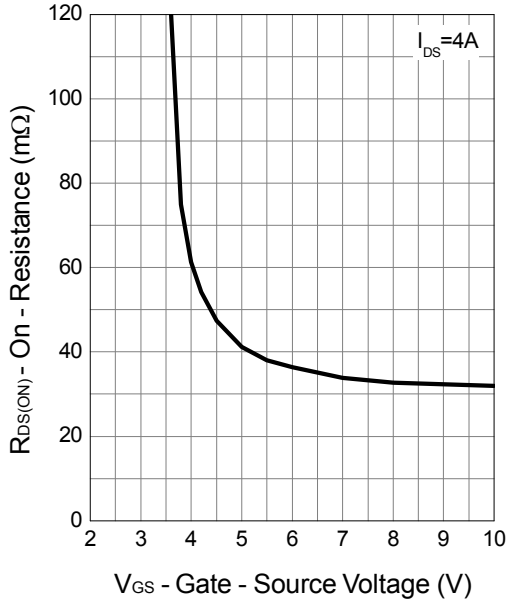
Output Characteristics



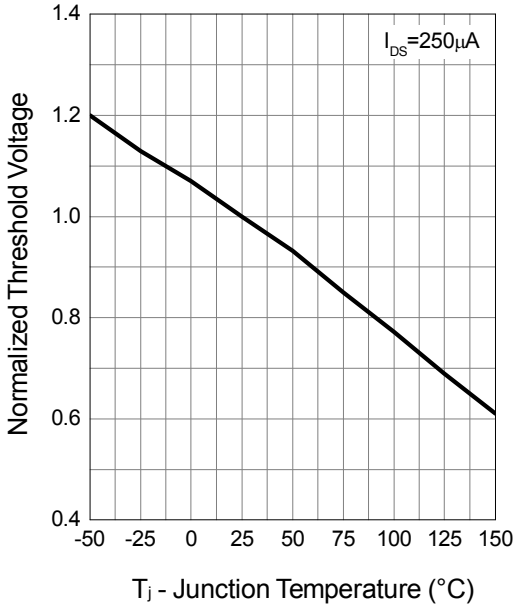
Drain-Source On Resistance



Gate-Source On Resistance

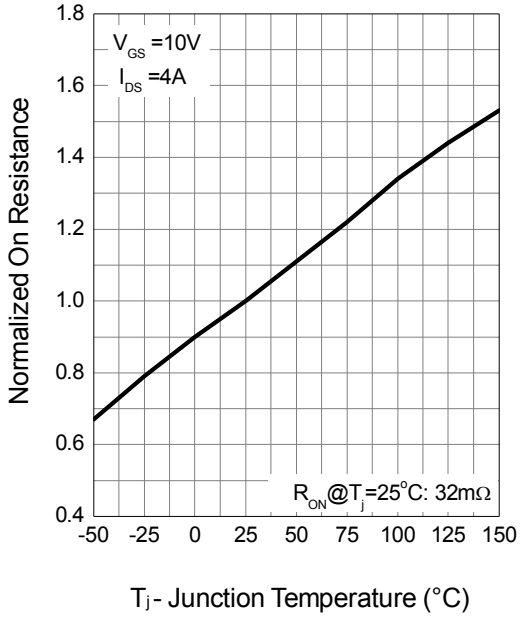


Gate Threshold Voltage

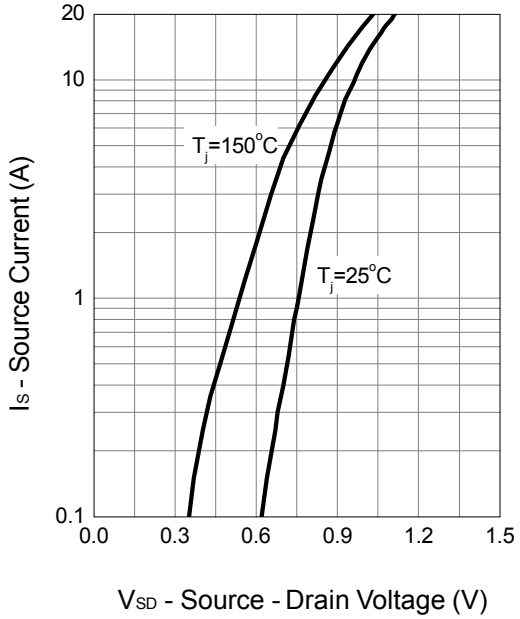


Typical Operating Characteristics (Cont.)

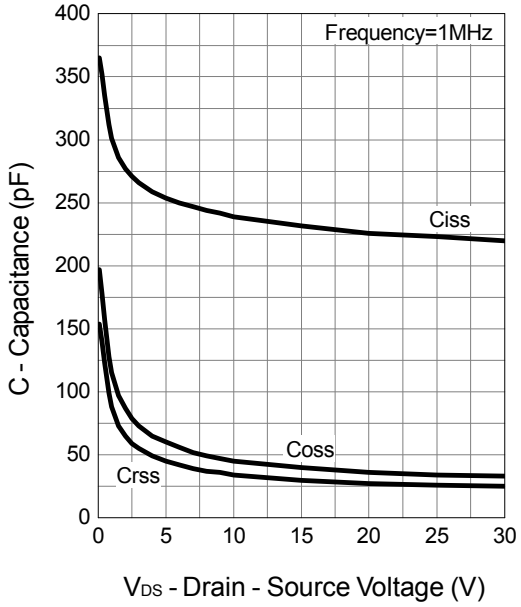
Drain-Source On Resistance



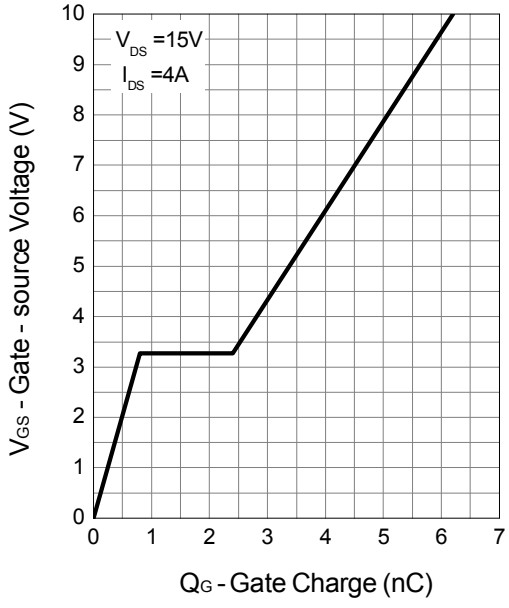
Source-Drain Diode Forward



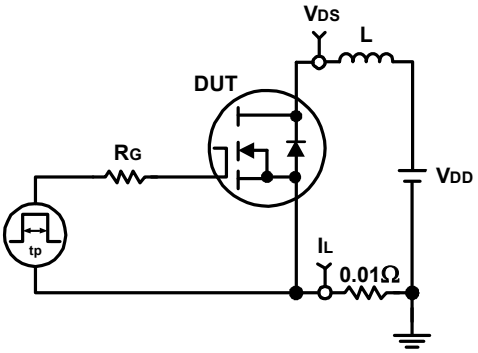
Capacitance

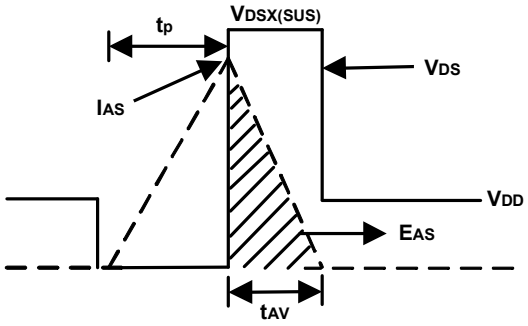


Gate Charge

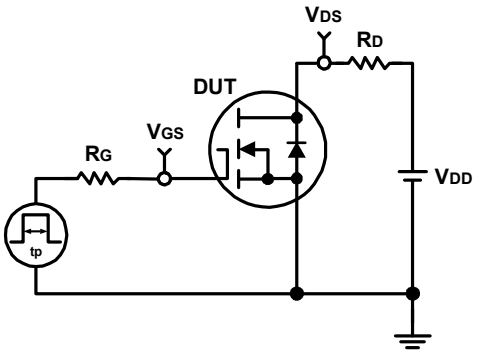


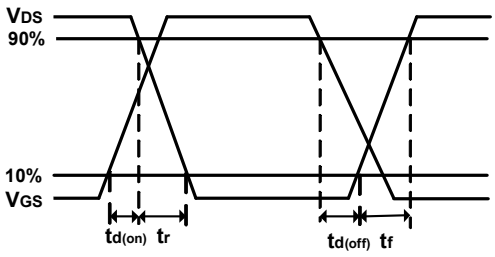
Avalanche Test Circuit and Waveforms





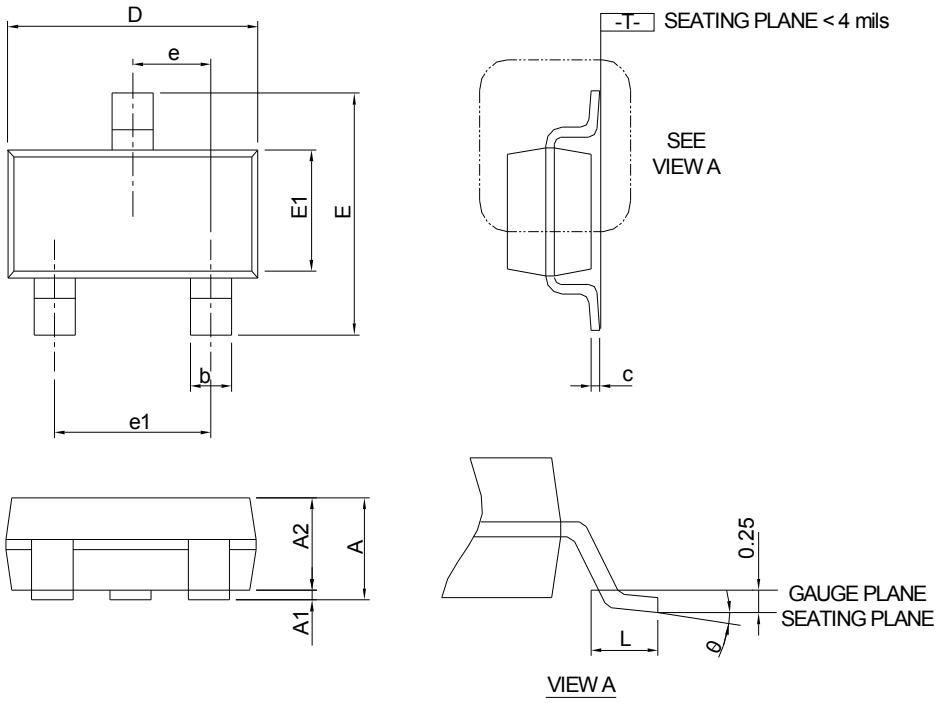
Switching Time Test Circuit and Waveforms





Package Information

SOT-23-3



SYMBOL	SOT-23-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.20	-	0.047
A1	0.00	0.08	0.000	0.003
A2	0.90	1.12	0.035	0.044
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

Note : Dimension D and E1 do not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN