N-Channel Enhancement Mode MOSFET
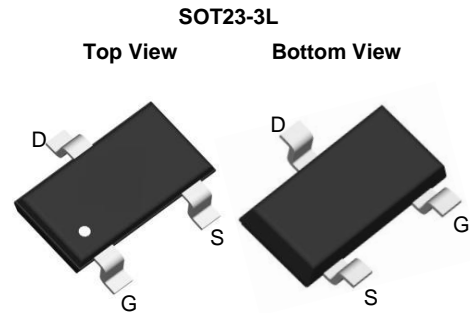
Features

- 30V/5.7A
- $R_{DS(ON)}$=19mΩ （typ) @VGS=10V
  $R_{DS(ON)}$=25mΩ （typ) @VGS=4.5V
- 100% UIS & RG Tested
- Reliableand Rugged
- Lead Freeand Green Devices Available (RoHS Compliant)

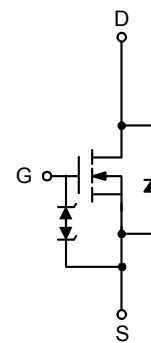### Applications

- Power Management for Industrial DC/DC Converters

Marking

Marking	X4****

SOT23-3L

Top View　　**Bottom View**

N-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
I_D	Continuous Drain Current		5.7	A
I_{DM}	Pulsed Drain Current		64	
I_S	Diode Continuous Forward Current		1.7	A
T_{STG}, T_j	Storage Temperature Range		-55 to 150	°C
PD	Power Dissipation	T_A=25°C	1.4	W
		T_A=70°C	0.9	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		90	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	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=55°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_{DS}=250µA	0.5	-	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=5.7A	-	19	25	mΩ
		V_{GS}=4.5V, I_{DS}=5A	-	25	35	
Body Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.7	1.0	V
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS} =15V, Frequency=1.0MHz	-	416	-	pF
C_{oss}	Output Capacitance		-	62	-	
C_{rss}	Reverse transfer capacitance		-	40	-	
$t_{d(ON)}$	Turn-on delay Time	V_{GS}=10V ,V_{DS}=15V R_G=6Ω, I_D=1A,R_L=10Ω,	-	7	15	nS
t_r	Turn-on rise Time		-	10	20	
$t_{d(OFF)}$	Turn-off delay Time		-	20	40	
t_f	Turn-off rise Time		-	11	20	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS} =15V, V_{GS}=10V, I_{DS}=5.7A	-	10	-	nC
Q_{gs}	Gate-Source Charge		-	1.7	-	
Q_{gd}	Gate-Drain Charge		-	3.2	-	

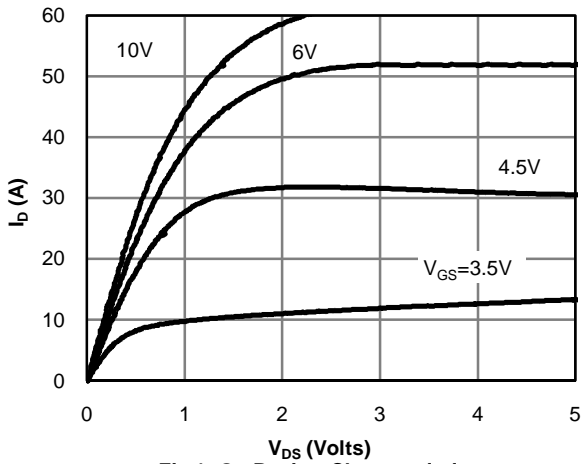# TYPICAL CHARACTERISTICS (25℃ *Unless Note*)
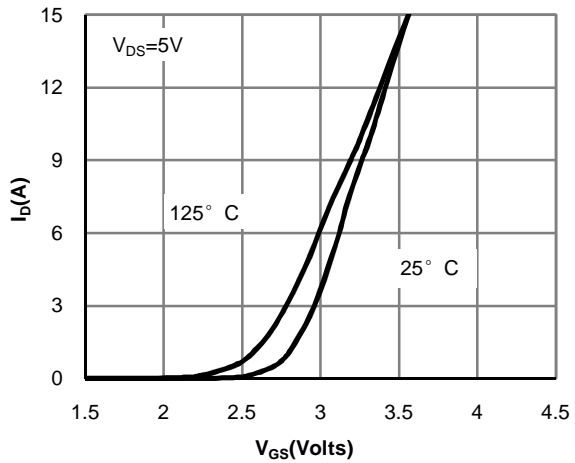
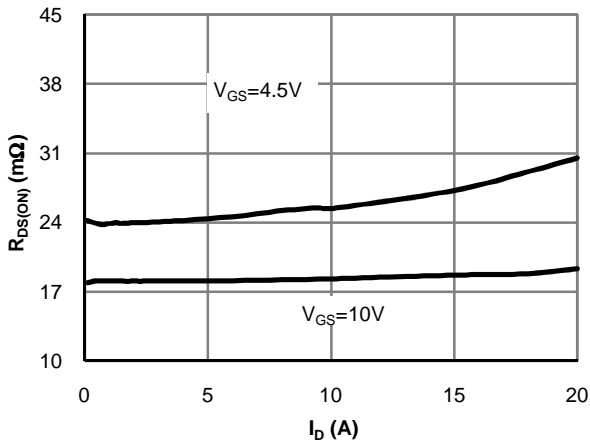Fig 1: On-Region Characteristics

Figure 2: Transfer Characteristics

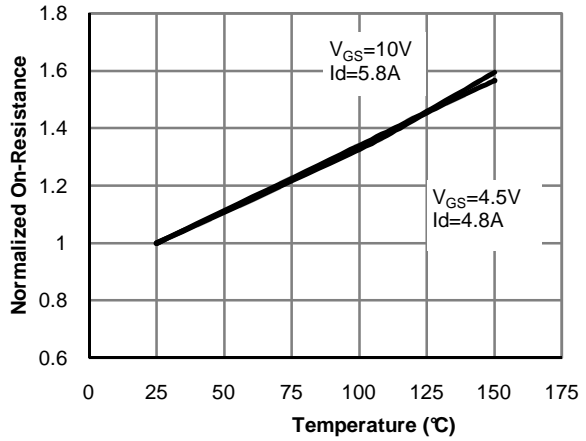Figure 3: On-Resistance vs. Drain Current and Gate Voltage
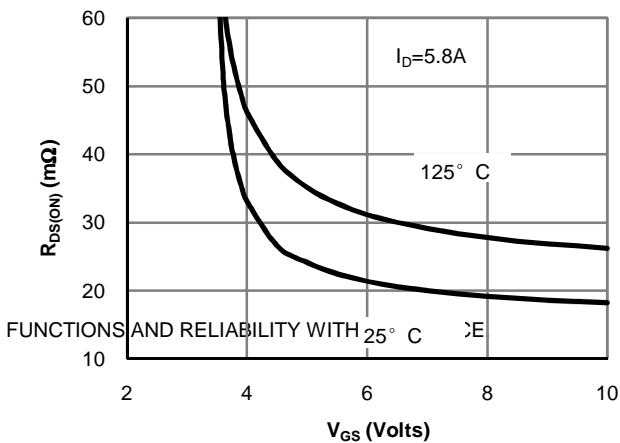
Figure 4: On-Resistance vs. Junction Temperature

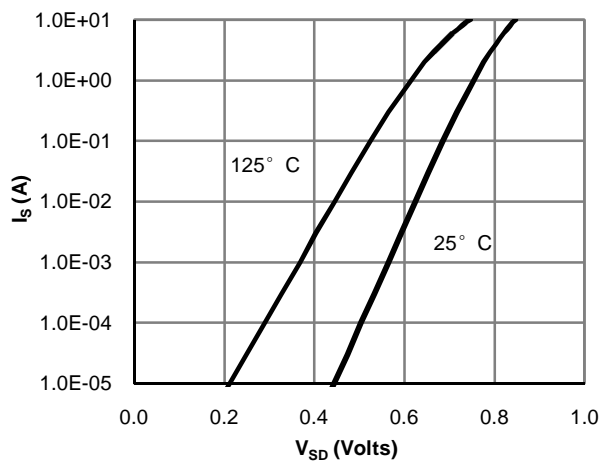Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

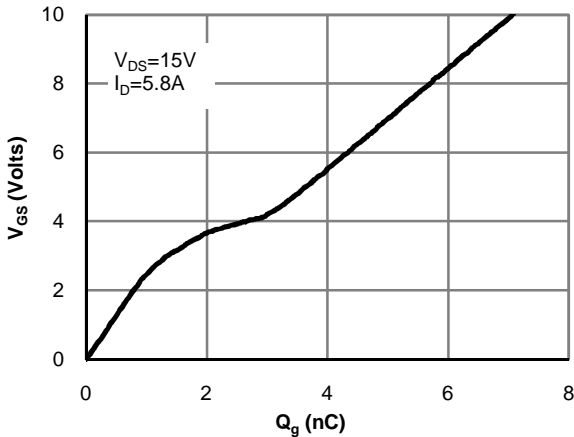## TYPICAL CHARACTERISTICS *(continuous)*
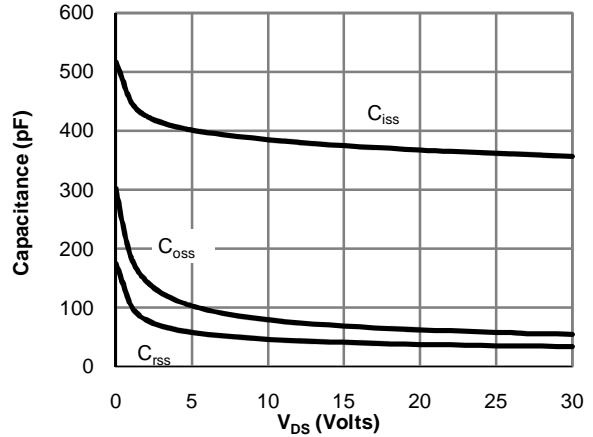

Figure 7: Gate-Charge Characteristics
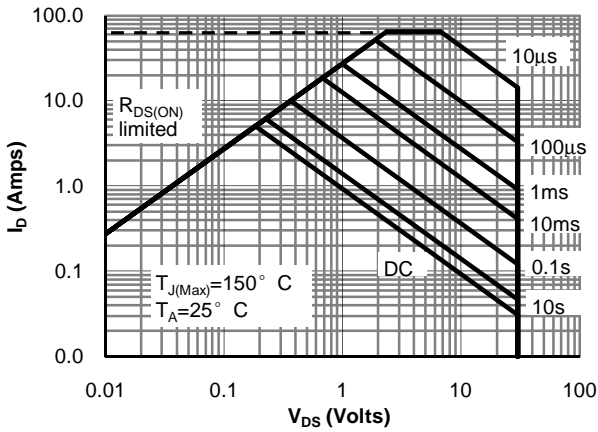

Figure 8: Capacitance Characteristics
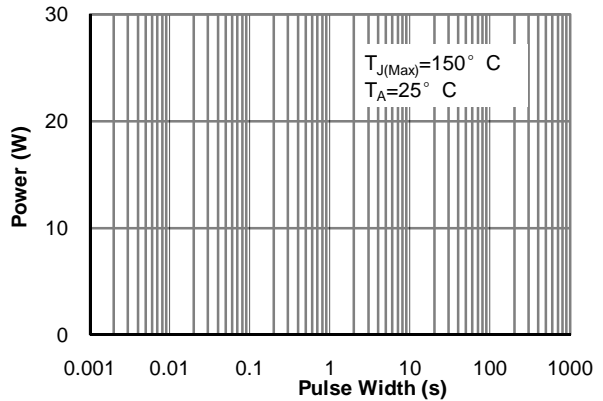

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

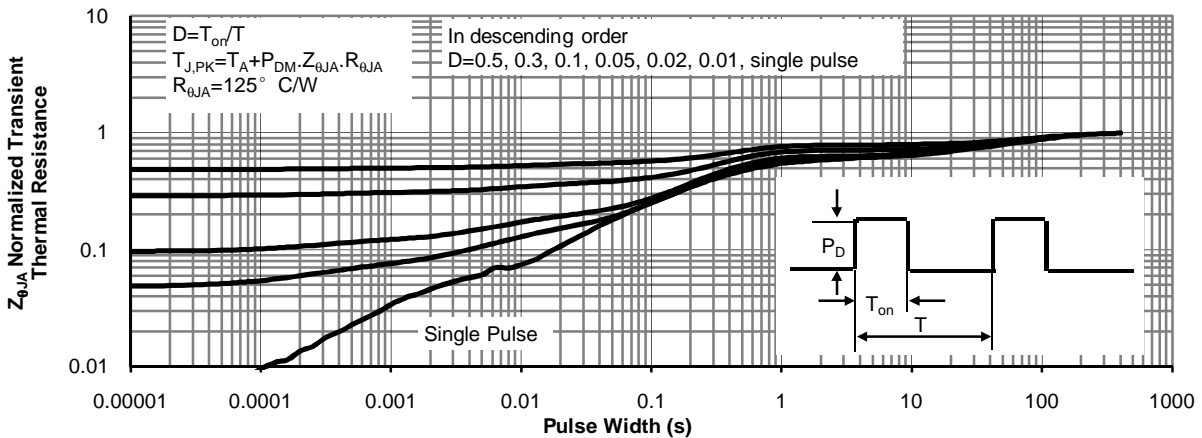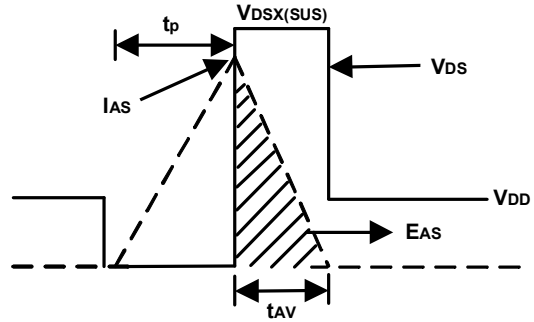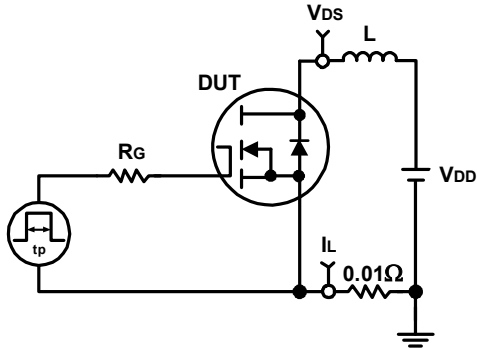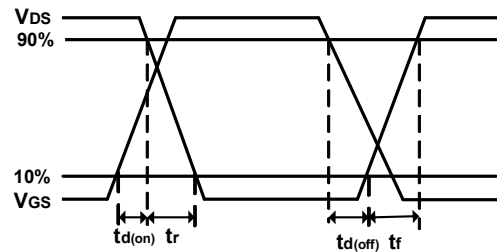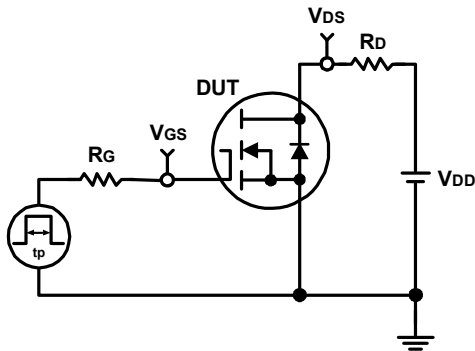Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

Figure 11: Normalized Maximum Transient Thermal Impedance

Avalanche Test Circuit and Waveforms

Switching Time Test Circuit and Waveforms

Package Information

SOT23-3L

SYMBOL	SOT 23-3L			
	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

UNIT: mm

Attention

- Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied.YiDeng Wei Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all YiDeng Wei Semiconductor products described or contained herein.

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