

300V N-CHANNEL ENHANCEMENT MODE MOSFET

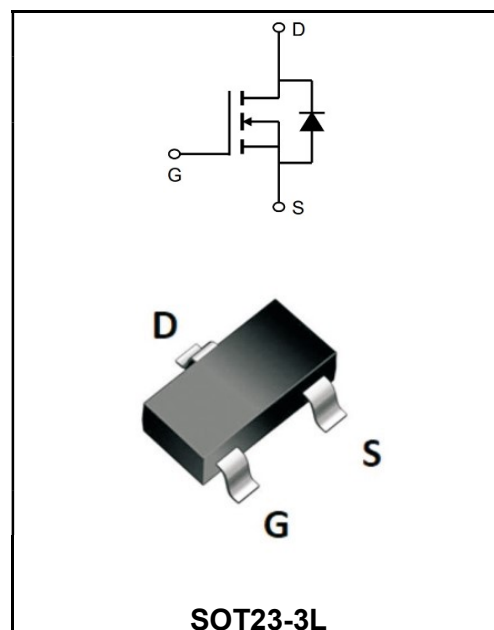
MAIN CHARACTERISTICS

I_D	2A
V_{DSS}	300V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$< 4\Omega$ (Type: 3 Ω)



Application

- ◆ Uninterruptible Power Supply(UPS)
- ◆ Power Factor Correction (PFC)



Product Specification Classification

Part Number	Package	Marking	Pack
YFW2N30MI	SOT23-3L	MC3-2A	3000PCS/Tape

Maximum Ratings at $T_c=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	300	V
Continuous Drain Current	I_D	2	A
Pulsed Drain Current	I_{DM}	12	A
Gate - Source Voltage	V_{GS}	± 20	V
Single Pulse Avalanche Energy	E_{AS}	30	mJ
Avalanche Current	I_{AR}	1.9	A
Repetitive Avalanche Energy	E_{AR}	0.9	mJ
Power Dissipation($T_c=25^\circ\text{C}$)	P_D	35.2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	3.55	$^\circ\text{C/W}$
Thermal Resistance, Junction ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	V(BR)DSS	300	-	-	V
Gate- Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	V_{GS(th)}	2.0	-	4.0	V
Drain-Source On-Resistance (Note3)	$V_{GS}=10V, I_D=1.5A$	R_{DS(on)}	-	3.0	4.0	Ω
Zero Gate Voltage Drain Current	$V_{DS}=300V, V_{GS}=0V, T_J=25^{\circ}C$	I_{DSS}	-	-	1	μA
	$V_{DS}=240V, V_{GS}=0V, T_J=125^{\circ}C$		-	-	100	
Gate-Source Leakage	$V_{GS}=\pm 25V$	I_{GSS}	-	-	±100	nA
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	138	-	pF
Output Capacitance		C_{oss}	-	30	-	
Reverse Transfer Capacitance		C_{rss}	-	5	-	
Total Gate Charge	$V_{DD}=240V$ $I_D=3A$ $V_{GS}=10V$	Q_g	-	4.4	-	nC
Gate-Source Charge		Q_{gs}	-	0.7	-	
Gate-Drain Charge		Q_{gd}	-	2	-	
Turn-on delay time	$V_{DD}=150V$ $I_D=3A$ $R_G=25\Omega$	t_{d(on)}	-	18	-	nS
Turn-on Rise Time		T_r	-	55	-	
Turn-Off Delay Time		t_{d(OFF)}	-	60	-	
Turn-Off Fall Time		t_f	-	55	-	
Continuous Body Diode Current	$T_C=25^{\circ}C$	I_S	-	-	3	A
Pulsed Diode Forward Current		I_{SM}	-	-	12	
Reverse Recovery Time	$V_{GS}=0V, I_S=3A$ $diF/dt=100A/\mu s$	t_{rr}	-	250	-	nS
Reverse Recovery Charge		Q_{rr}	-	1.8	-	uC
Body Diode Voltage	$T_J=25^{\circ}C, I_{SD}=3A, V_{GS}=0V$	V_{SD}	-	-	1.4	V

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. IAS = 1.9A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 °C
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Ratings and Characteristic Curves

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

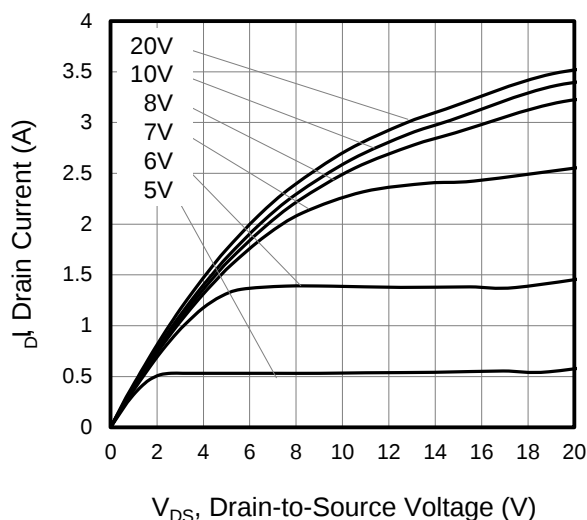


Figure 2. Body Diode Forward Voltage

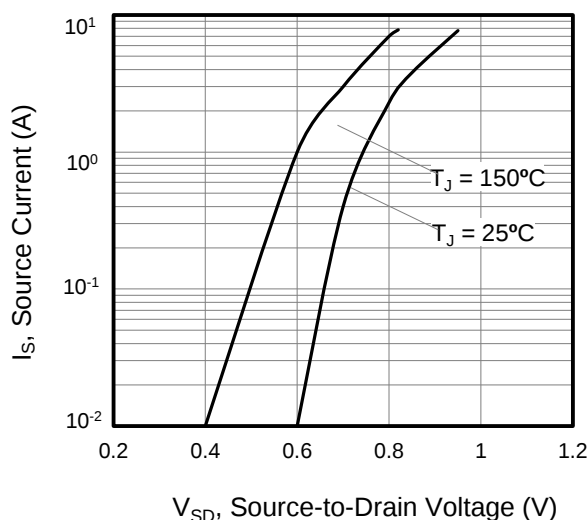


Figure 3. Drain Current vs. Temperature

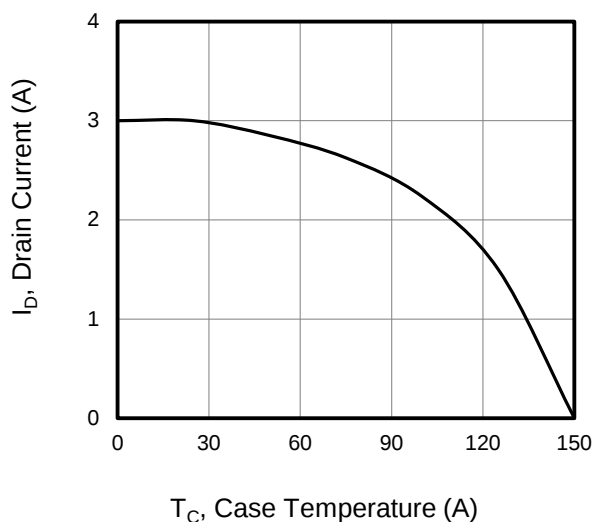


Figure 4. BV_{DSS} Variation vs. Temperature

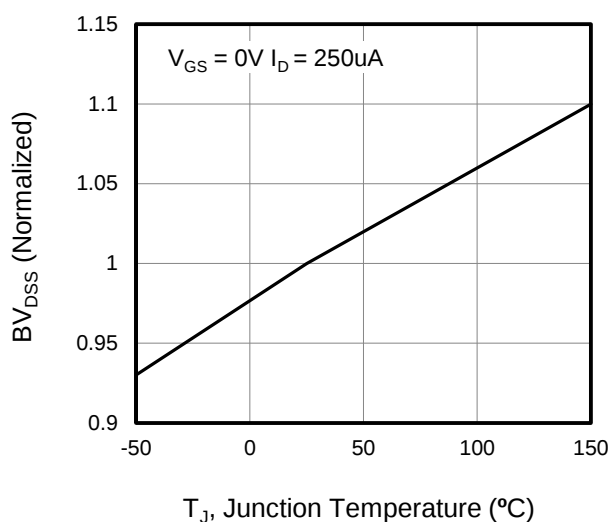


Figure 5. Transfer Characteristics

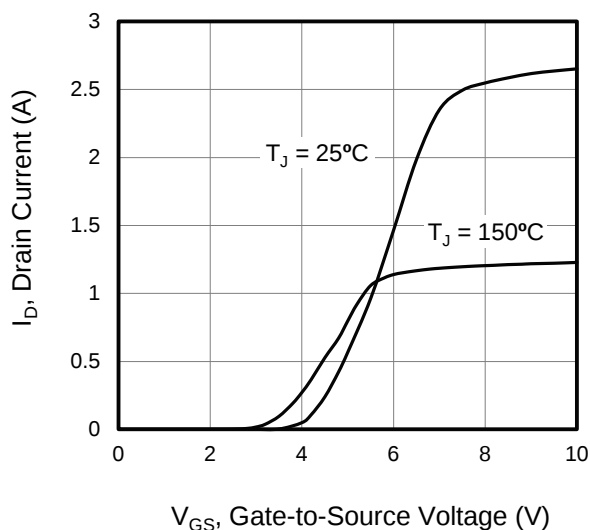
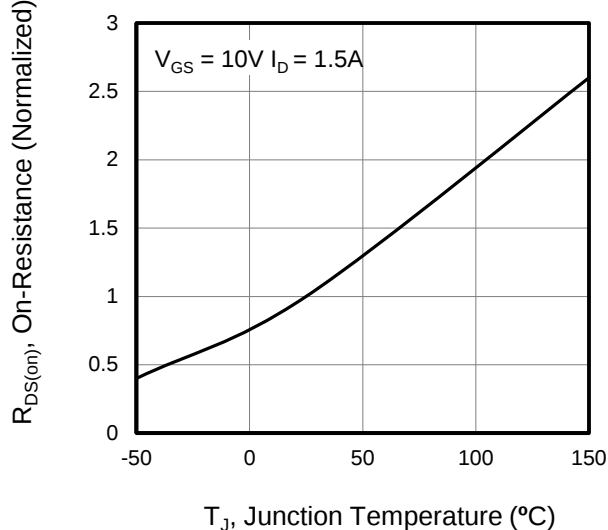


Figure 6. On-Resistance vs. Temperature



Ratings and Characteristic Curves

Figure 7. Capacitance

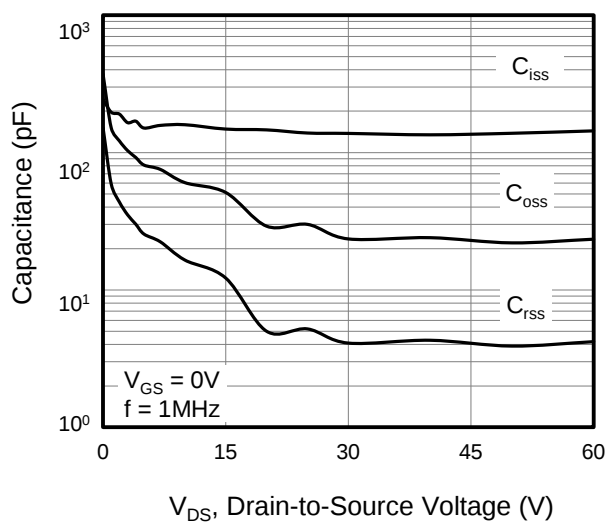


Figure 8. Gate Charge

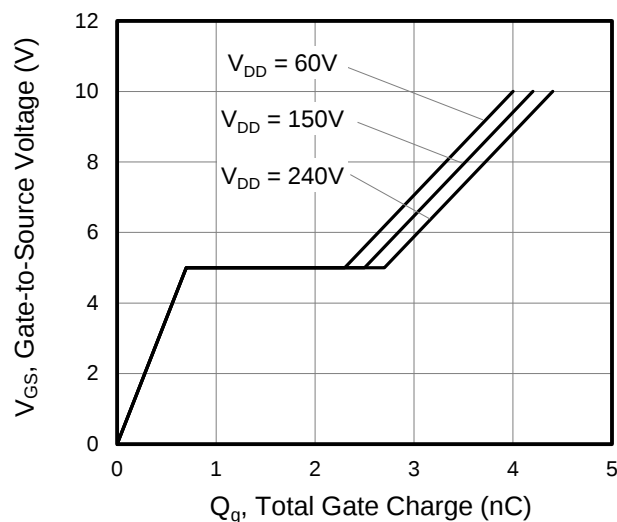
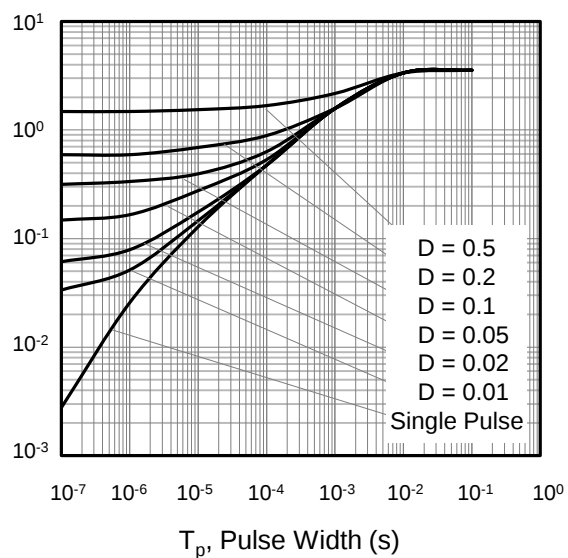
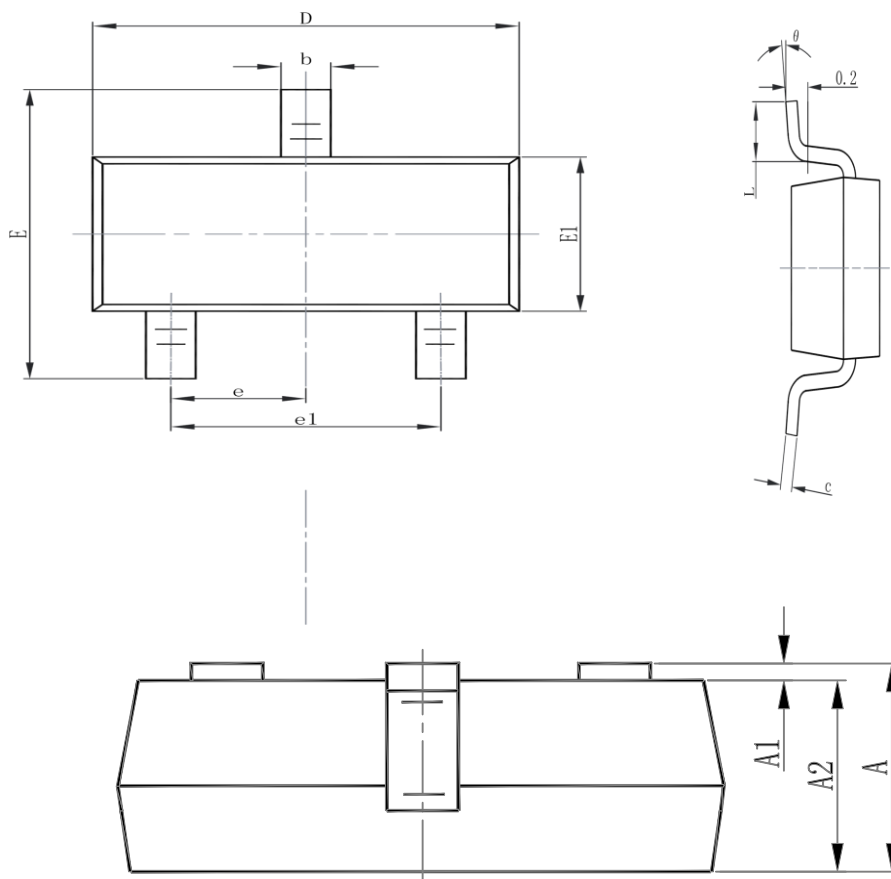


Figure 9. Transient Thermal Impedance



SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°