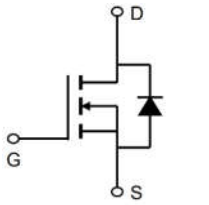
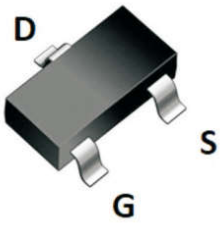
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	8A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 12mΩ(Type:8.5 mΩ)





SOT23-3L

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW2320MI	SOT23-3L	2320	3000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	20	V
Gate - Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	8	A
Drain Current-Continuous(T_C=100℃)	$I_{D(100℃)}$	4.5	A
Pulsed Drain Current	I_{DM}	75	A
Maximum Power Dissipation	P_D	12	W
Single pulse avalanche energy	E_{AS}	1	mJ
Operating Junction and Storage Temperature Range	T_J ,T_{STG}	-55 to +150	°C
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	3.8	°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=250uA	BV_{DSS}	20	22	-	V
Zero Gate Voltage Drain Current	V_{DS}=20V , V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	V_{GS}=±12V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.5	0.65	1.2	V
Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=6A	$R_{DS(ON)}$	-	8.5	12	mΩ
	V_{GS}=2.5V, I_D=3A		-	10	15	
Forward Transconductance	V_{DS}=5V, I_D=20A	g_{FS}	10	-	-	S
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	625	-	pF
Output Capacitance		C_{oss}	-	162	-	
Reverse Transfer Capacitance		C_{rss}	-	105	-	
Turn-on delay time	V_{GS} =10V V_{DS}=10V R_L=0. 5Ω R_{GEN}=3Ω	$t_{d(on)}$	-	4.5	-	ns
Turn-on Rise Time		T_r	-	9.2	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	18.7	-	
Turn-Off Fall Time		t_f	-	3.3	-	
Total Gate Charge	V_{GS}=10V V_{DS}=10V I_D=20A	Q_g	-	15	-	nC
Gate-Source Charge		Q_{gs}	-	1.8	-	
Gate-Drain Charge		Q_{gd}	-	2.8	-	
Diode Forward Voltage (Note 3)	V_{GS}=0V , I_S=25A	V_{SD}	-	-	1.2	V
Diode Forward Current (Note 2)		I_S	-	-	25	A
Reverse Recovery Time	T_J = 25°C, I_F = 20A di/dt = 100A/μs (Note3)	t_{rr}	-	18	-	ns
Reverse Recovery Charge		Q_{rr}	-	9.5	-	nC
Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)	t_{on}	-	-	-	-

Notes:
1、Repetitive Rating: Pulse width limited by maximum junction temperature.
2、Surface Mounted on FR4 Board, t ≤ 10 sec.
3、Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4、Guaranteed by design, not subject to production

Ratings and Characteristic Curves

Typical Characteristics

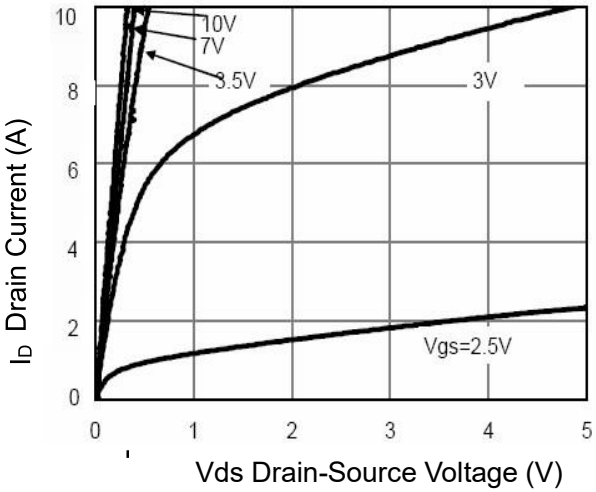


Figure 1 Output Characteristics

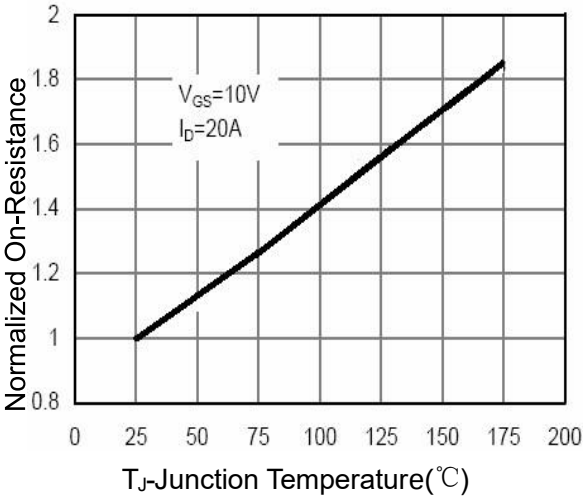


Figure 4 Rdson-Junction Temperature

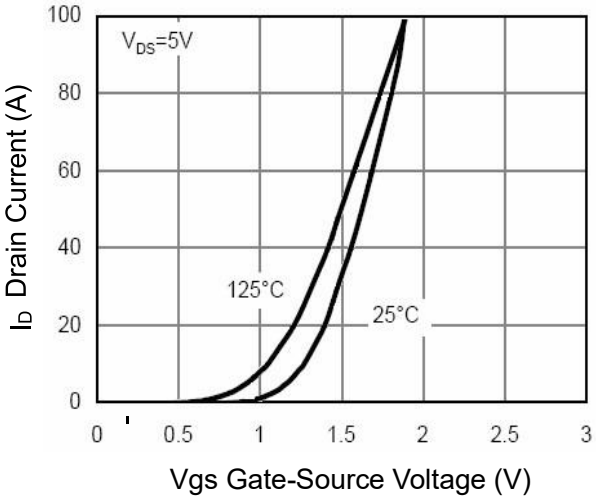


Figure 2 Transfer Characteristics

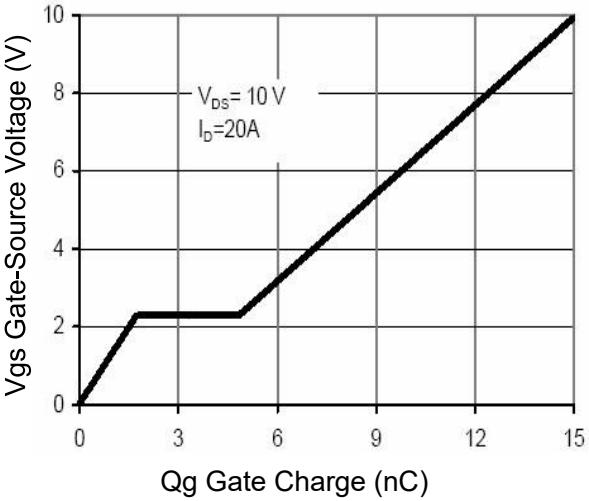


Figure 5 Gate Charge

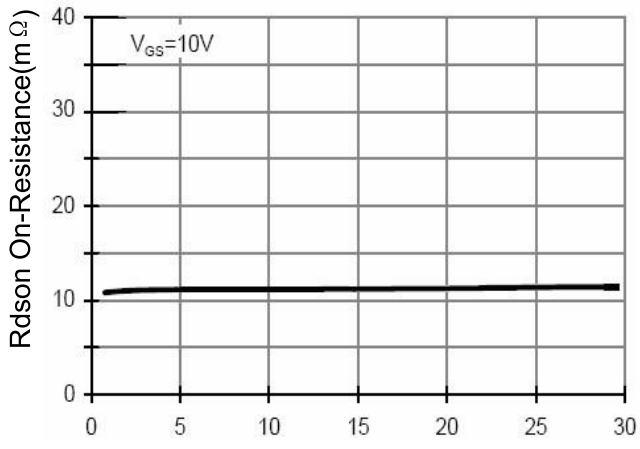


Figure 3 Rdson-Drain Current

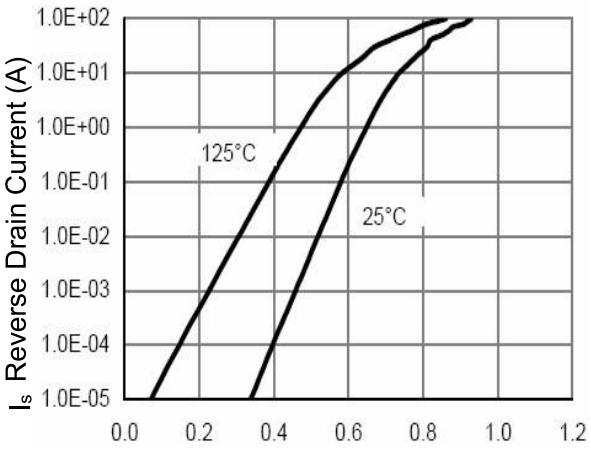


Figure 6 Source- Drain Diode Forward

Ratings and Characteristic Curves

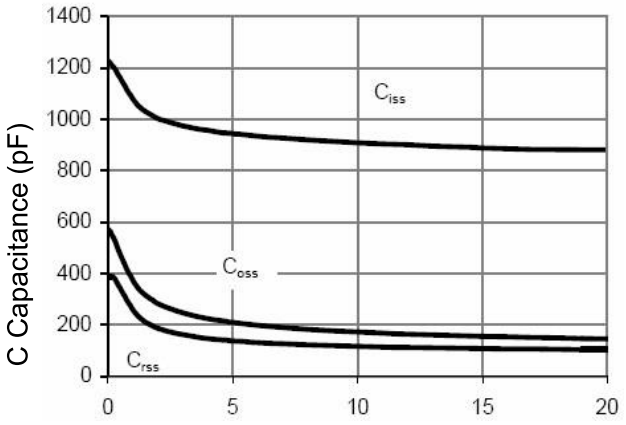


Figure 7 Capacitance vs Vds

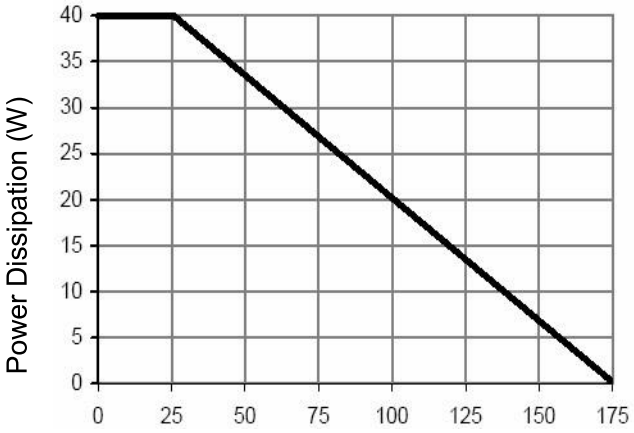


Figure 9 Power De-rating

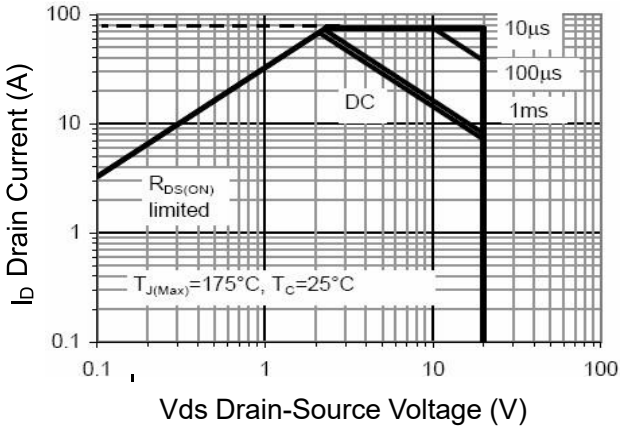


Figure 8 Safe Operation Area

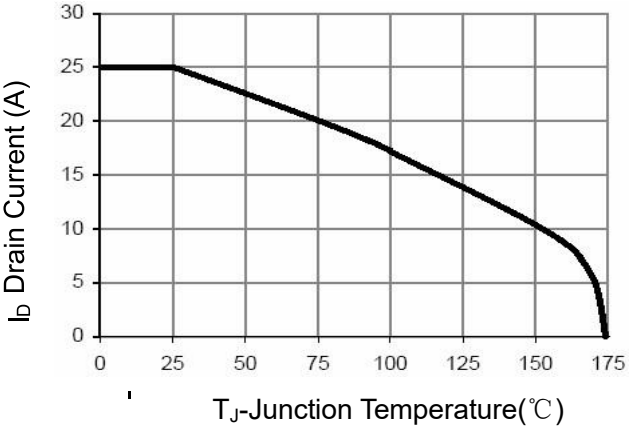


Figure 10 Current De-rating

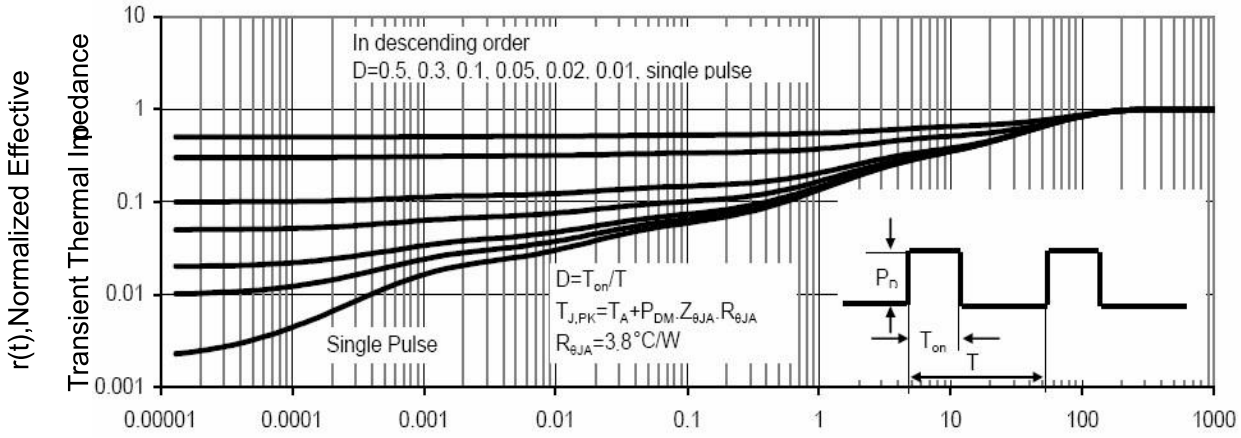
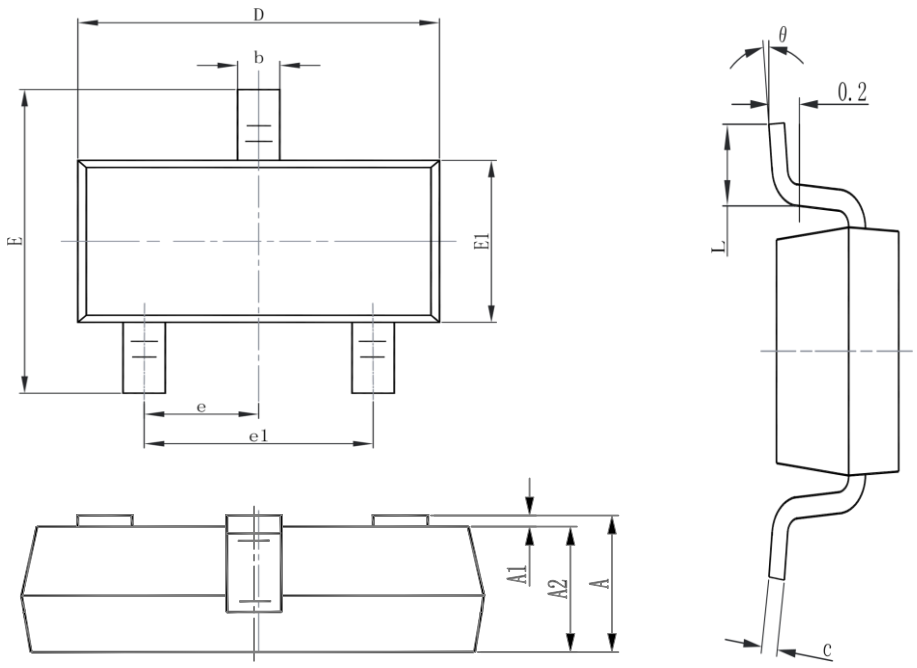


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions Millimeters

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°