

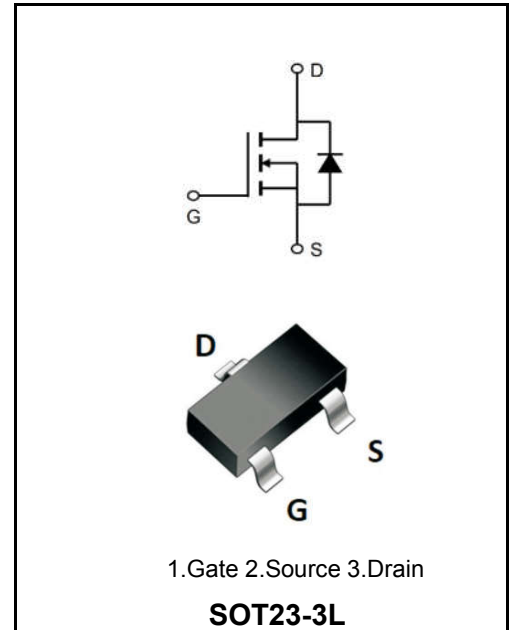
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

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

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Marking Code	
YFW2320MI	2320

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(Tc=100°C)	$I_{D(100°C)}$	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	$R_{θJC}$	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	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	20	22	-	V
Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	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	m Ω
	$V_{GS}=2.5V, I_D=3A$		-	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	-	μF
Output Capacitance		C_{oss}	-	162	-	
Reverse Transfer Capacitance		C_{rss}	-	105	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=10V$ $R_L=0.5\Omega$ $R_{GEN}=3\Omega$	$t_{d(on)}$	-	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	$T_J = 25^\circ C, I_F = 20A$ 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, $t \leq 10$ sec.
- 3、Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- 4、Guaranteed by design, not subject to production

Ratings and Characteristic Curves

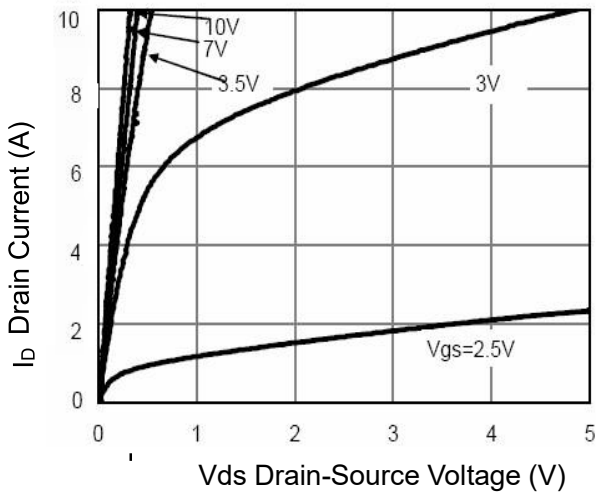


Figure 1 Output Characteristics

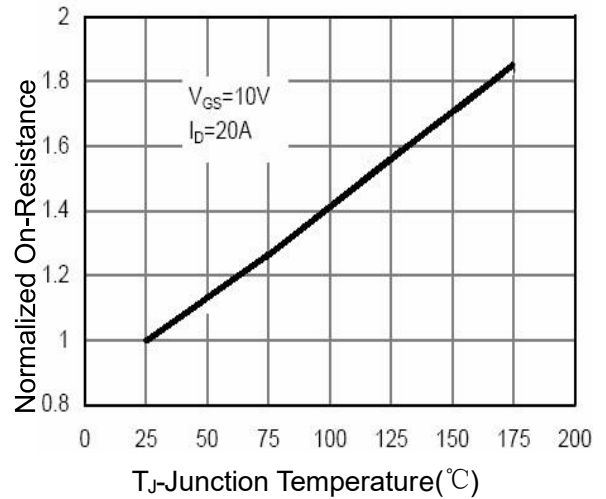


Figure 4 $R_{ds(on)}$ -Junction Temperature

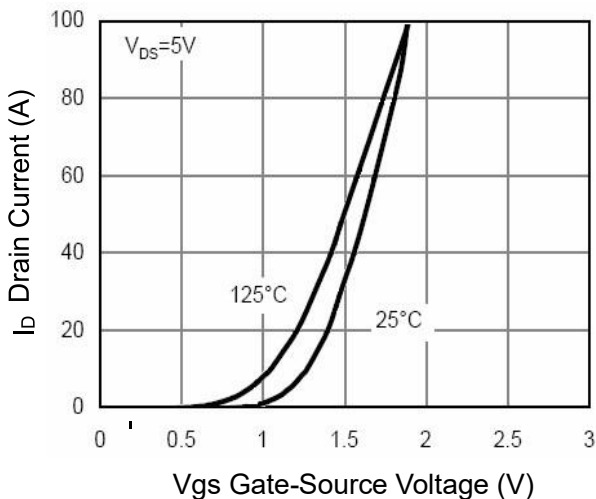


Figure 2 Transfer Characteristics

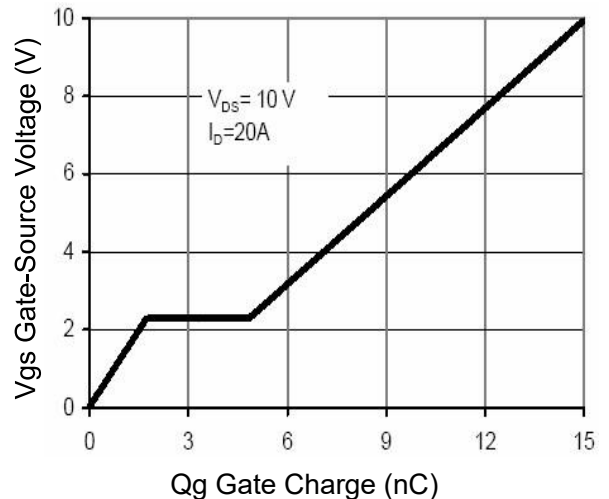


Figure 5 Gate Charge

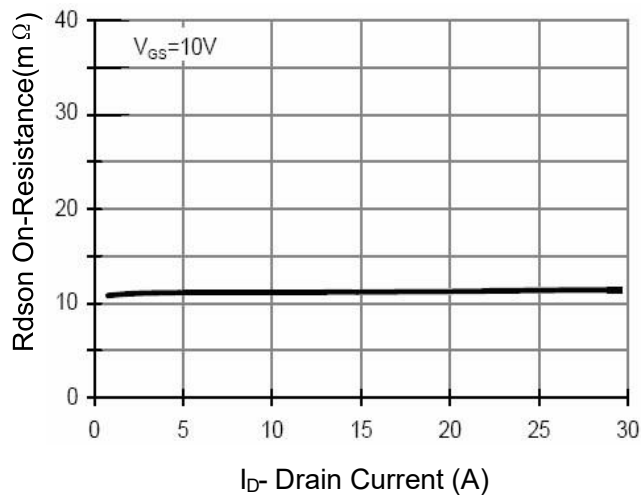


Figure 3 $R_{ds(on)}$ -Drain Current

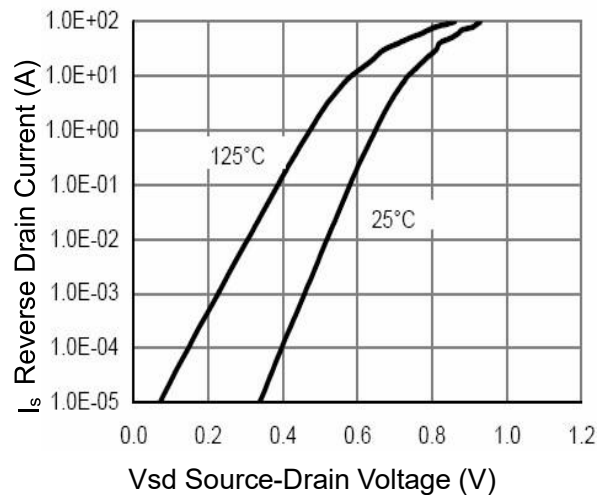
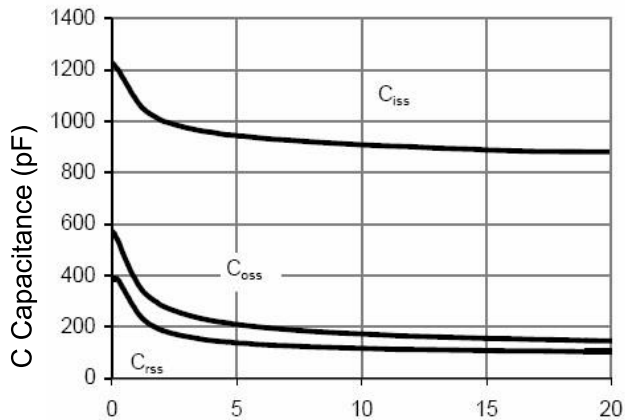
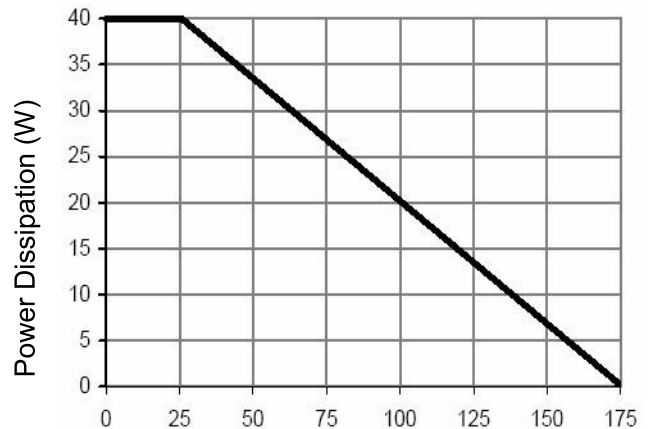


Figure 6 Source- Drain Diode Forward

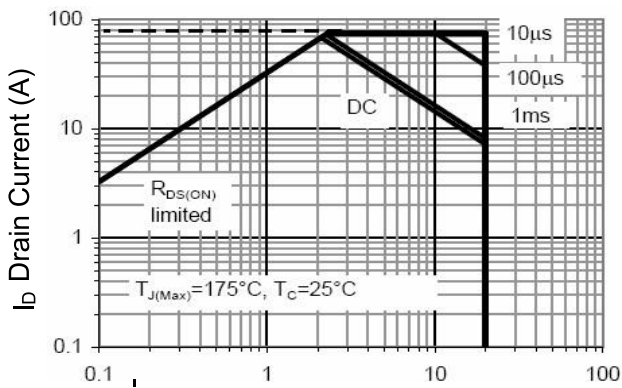
Ratings and Characteristic Curves



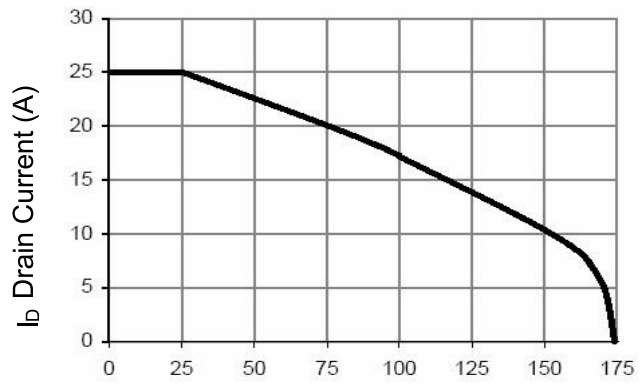
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



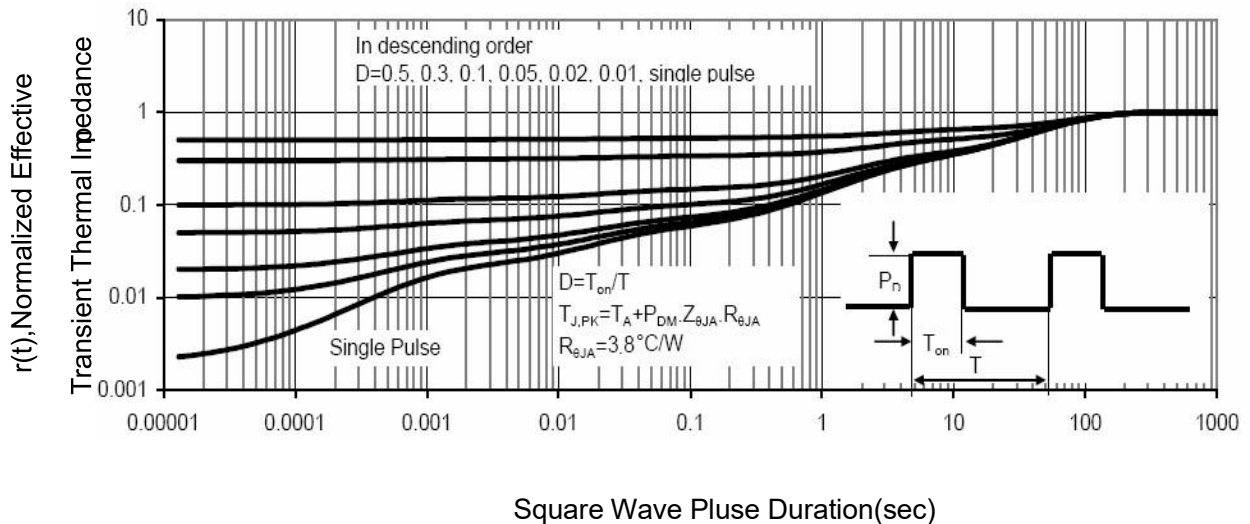
T_J-Junction Temperature(°C)
Figure 9 Power De-rating



Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area



T_J-Junction Temperature(°C)
Figure 10 Current De-rating



Square Wave Pluse Duration(sec)
Figure 11 Normalized Maximum Transient Thermal Impedance

Ordering information

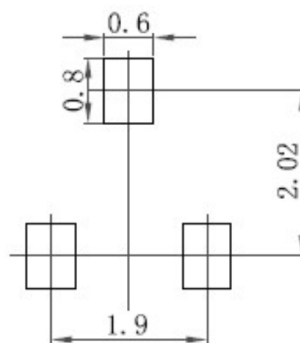
Package	Packing Description	Base Quantity	Packing Quantity
SOT23-3L	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

Package Dimensions

SOT23-3L

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.05	1.25	41	49.2
A1	0.10		3.93	
A2	1.05	1.15	41	45
b	0.30	0.50	12	20
c	0.10	0.20	3.93	7.9
D	2.82	3.02	111	119
E	1.50	1.70	59	67
E1	2.65	2.95	104	116
e	0.95		37.4	
e1	1.80	2.00	71	78
L	0.30	0.066	12	26
Θ	8°			

The recommended mounting pad size



Disclaimer

The information presented in this document is for reference only. Guangdong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <https://www.yfwdiode.com>, or consult YFW sales office for further assistance.