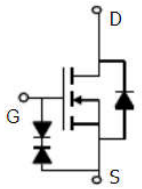
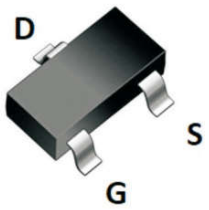
20V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	6.5A
V_{DSS}	20V
R_{DSON}-typ(@V_{GS}=4.5V)	< 33mΩ(Type:21 mΩ)





1.Gate 2.Source 3.Drain

SOT23-3L

Features

- ESD=2500HBM

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Marking Code	
YFW3416MI	3416

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	6.5	A
Drain Current-Pulsed (Note 1)	I_{DM}	30	A
Maximum Power Dissipation	P_D	1.4	W
Operating Junction and Storage Temperature Range	T_J ,T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	89	°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	-	-	V
Zero Gate Voltage Drain Current	V_{DS}=20V , V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	V_{GS}=±10V, V_{DS}=0V	I_{GSS}	-	-	±10	μA
Gate -Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	$V_{GS(th)}$	0.45	0.7	1.0	V
Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=6.5A	$R_{DS(ON)}$	-	17	27	mΩ
	V_{GS}=2.5V, I_D=5.5A		-	21	33	
	V_{GS}=1.8V, I_D=5A		-	28	40	
Forward Transconductance	V_{DS}=5V, I_D=6.5A	g_{FS}	8	-	-	S
Input Capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	660	-	pF
Output Capacitance		C_{oss}	-	160	-	
Reverse Transfer Capacitance		C_{rss}	-	87	-	
Turn-on delay time	V_{DD}=10V R_L=1. 5Ω V_{GS}=5V ,R_{GEN}=3Ω	$t_{d(on)}$	-	0.5	-	ns
Turn-on Rise Time		T_r	-	1	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	12	-	
Turn-Off Fall Time		t_f	-	4	-	
Total Gate Charge	V_{DS}=10V I_D=6.5A V_{GS}=4.5V	Q_g	-	8	-	nC
Gate-Source Charge		Q_{gs}	-	2.5	-	
Gate-Drain Charge		Q_{gd}	-	3	-	
Diode Forward Voltage (Note 3)	V_{GS}=0V , I_S=6.5A	V_{SD}	-	-	1.2	V
Diode Forward Current (Note 2)		I_S	-	-	6.5	A

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

Ratings and Characteristic Curves

Typical Characteristics

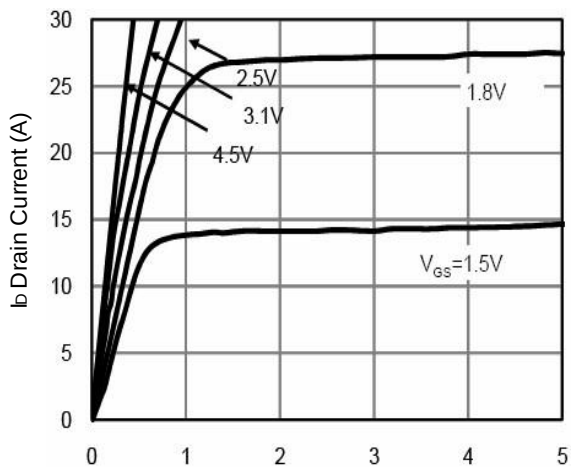


Fig.1 Typical Output Characteristics

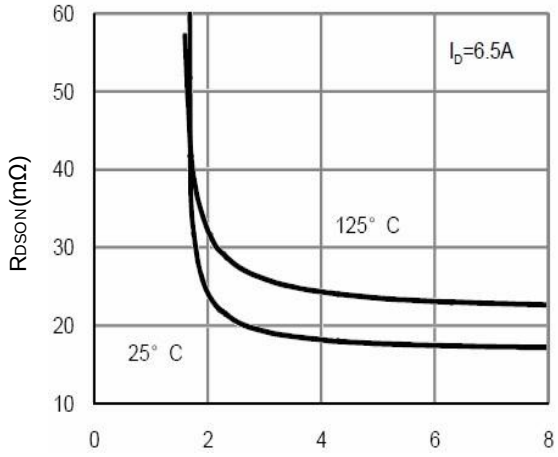


Fig.2 On-Resistance vs. Gate-Source

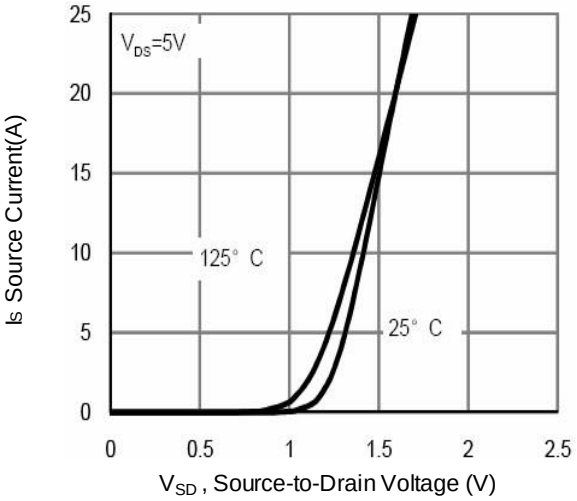


Fig.3 Forward Characteristics of Reverse

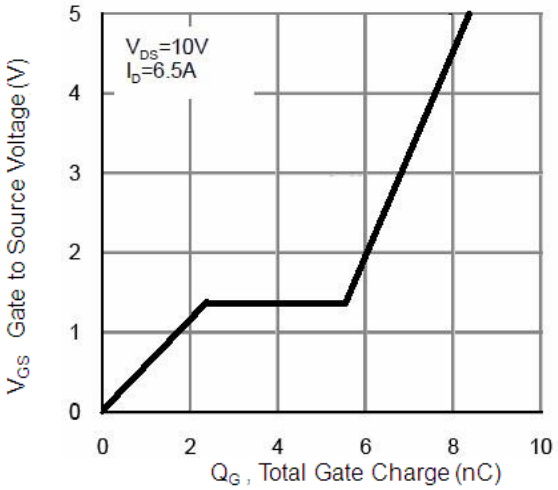


Fig.4 Gate-Charge Characteristics

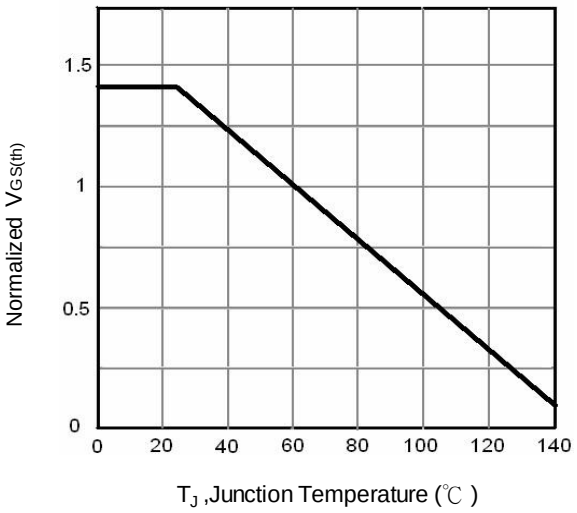


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

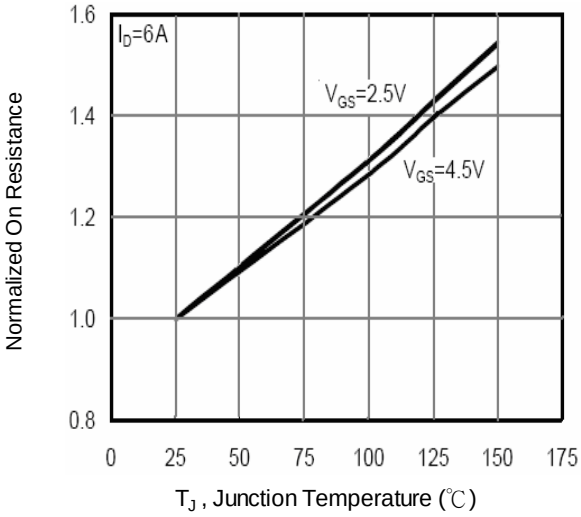


Fig.6 Normalized R_{DSON} vs. T_J

Ratings and Characteristic Curves

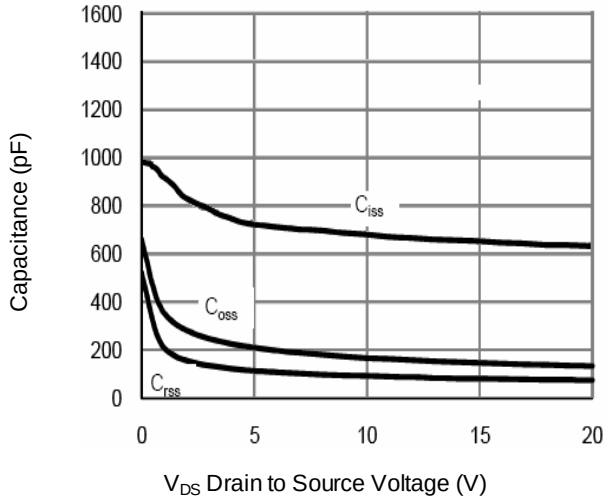


Fig.7 Capacitance

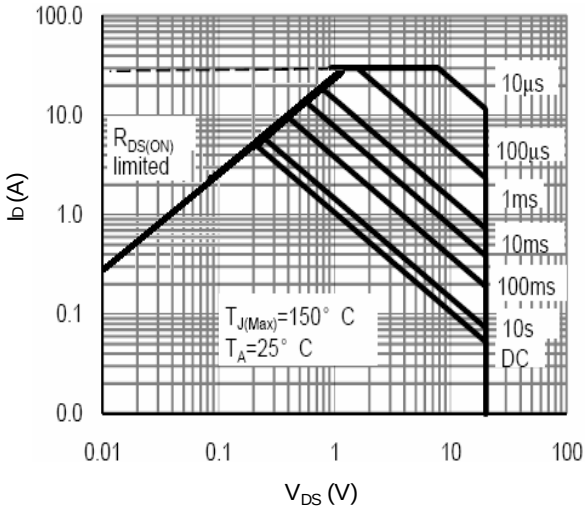


Fig.8 Safe Operating Area

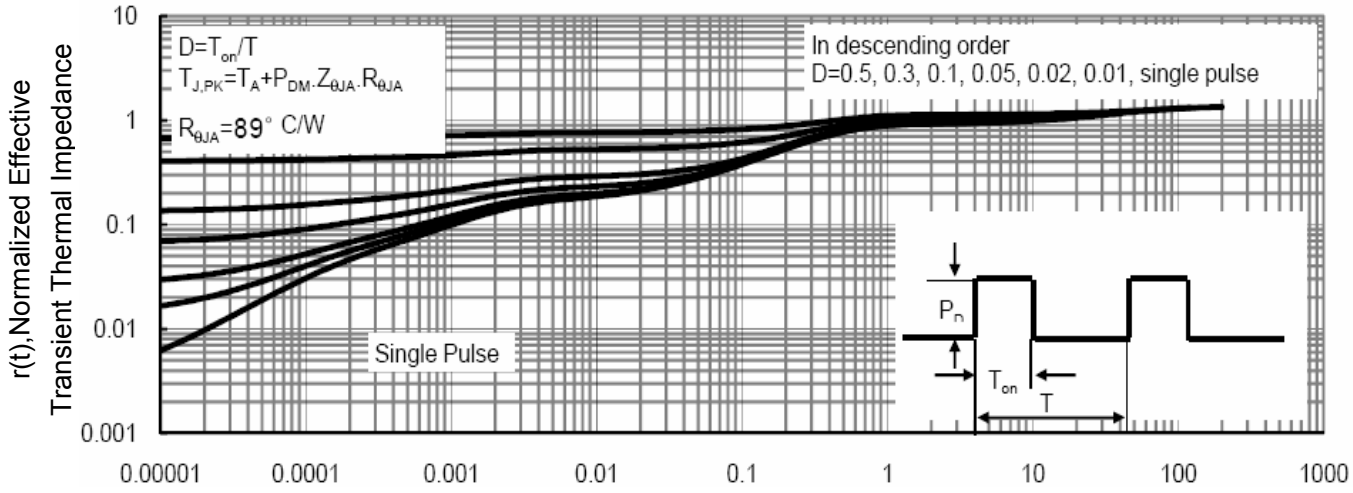


Fig.9 Normalized Maximum Transient Thermal Impedance

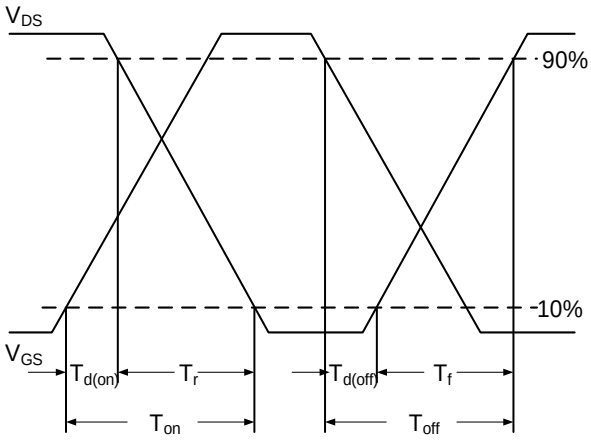


Fig.10 Switching Time Waveform

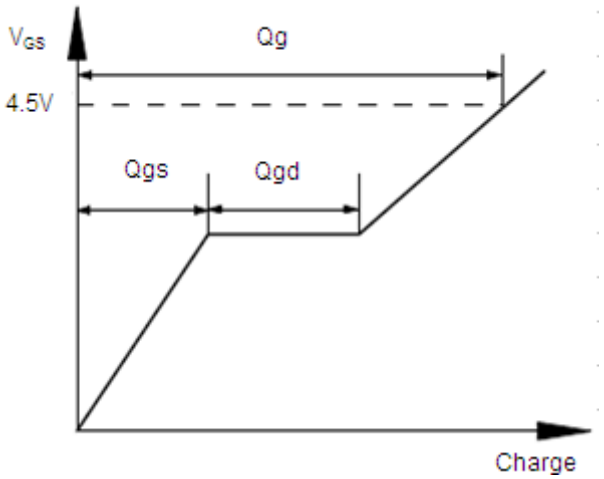


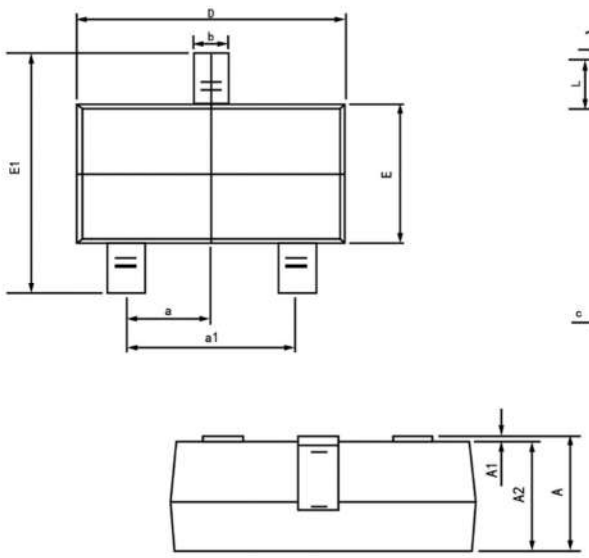
Fig.11 Gate Charge Waveform

Ordering information

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

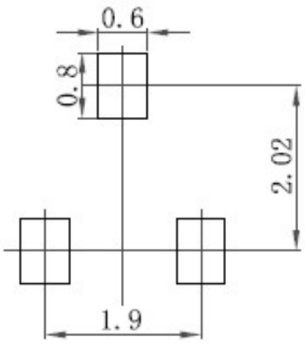
Package Dimensions

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



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