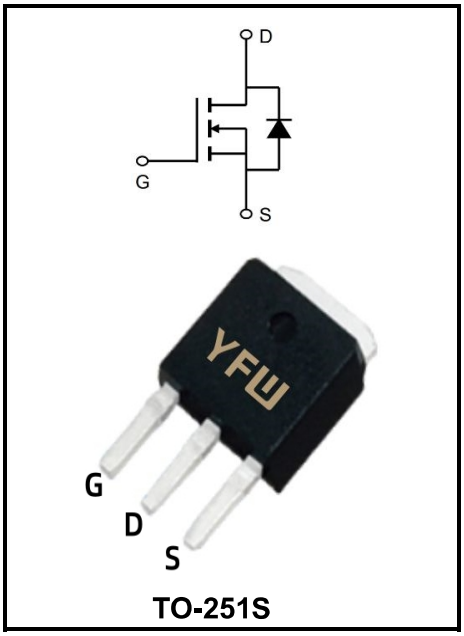
650V N-channel Super Junction MOSFET

MAIN CHARACTERISTICS

I_D	7A
V_{DS}	650V
R_{DSON}-typ(@V_{GS}=10V)	＜600mΩ(Typ:520mΩ)



TO-251S

FEATURES

- Low gate charge
- Very low switching and conduction loss
- Extremely high commutation ruggedness

APPLICATIONS

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS）
- Power Factor Correction(PFC)

MECHANICAL DATA

- Case:TO-251S/AMJ
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	7	A
Pulsed Drain Current (Note1)	I_{DM}	24	A
Power Dissipation	P_D	64	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	129	mJ
Operating Temperature Range	T_J	-50 to +150	°C
Storage Temperature Range	T_{STG}	-50 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.97	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62	°C/W

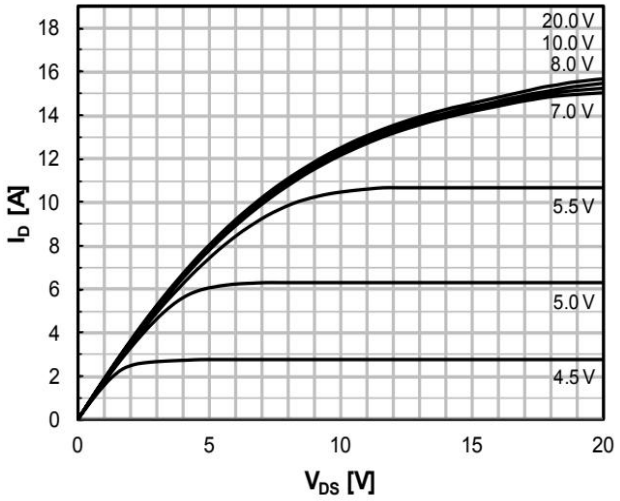
Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

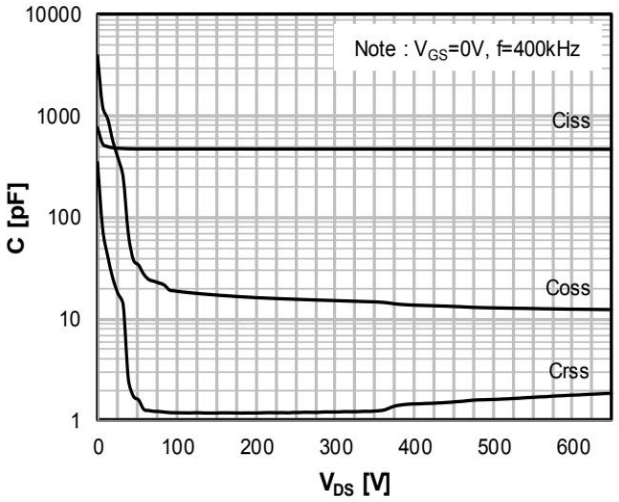
Maximum Ratings at Tc=25°C unless otherwise specified

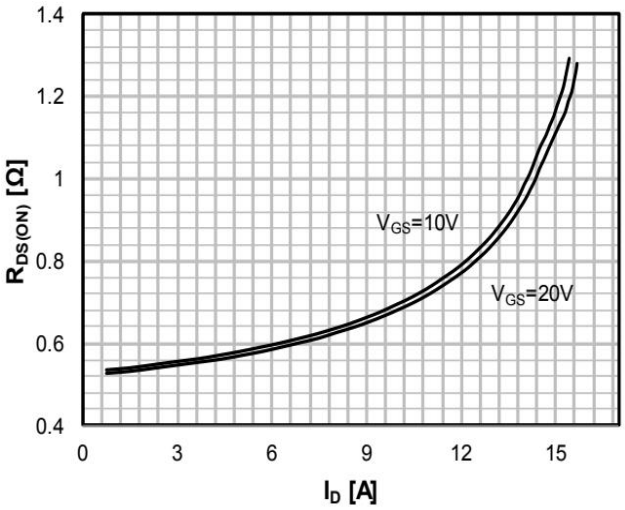
Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250 μA	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	V_{DS} =650 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 30 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	V_{GS}=10V, I_D=3.5A	$R_{DS(ON)}$	-	520	600	mΩ
Forward Transconductance	V_{DS} = 5 V, I_D = 2 A	gfs	-	-	8	S
Input Capacitance	V_{DS}=50V , V_{GS}=0V , f=1MHz	C_{iss}	-	715	-	pF
Output Capacitance		C_{oss}	-	35	-	
Reverse Transfer Capacitance		C_{rss}	-	1.7	-	
Turn-on Delay Time(Note2)	V_{DD} = 325V I_D = 7A V_{GS} =10V RG =25Ω	$t_{d(on)}$	-	17	-	ns
Rise Time(Note2)		T_r	-	26	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	53	-	
Fall Time(Note2)		t_f	-	38	-	
Total Gate Charge(Note2)	V_{DS} = 520V, V_{GS} = 10V, I_D = 7A	Q_g	-	13	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	2.1	-	
Gate to Drain Charge(Note2)		Q_{gd}	-	6.9	-	
Maximun Body-Diode Continuous Current		I_S	-	-	7	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	24	A
Drain-Source Diode Forward Voltage	V_{GS}=0V , IS=3.5A , TJ=25℃	V_{SD}	-	-	1.4	V
Body Diode Reverse Recovery Time	V_R=30V,I_F=1A, dI/dt=100A/μs	t_{rr}	-	151	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	565	-	nC

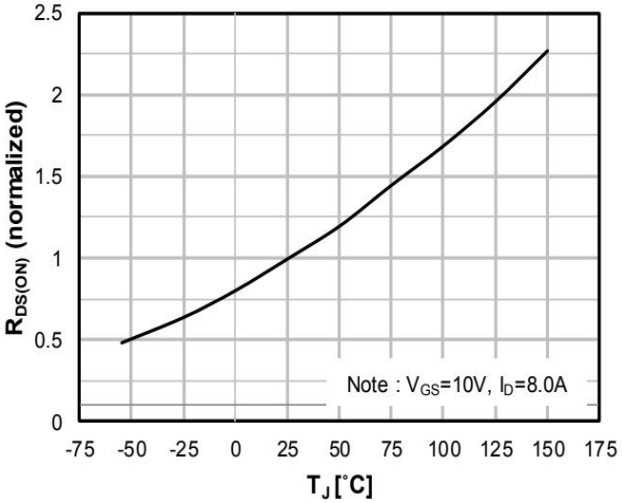
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

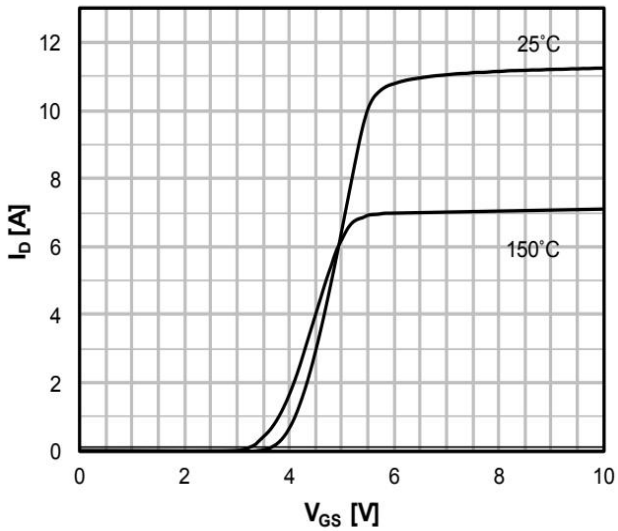
Ratings and Characteristic Curves

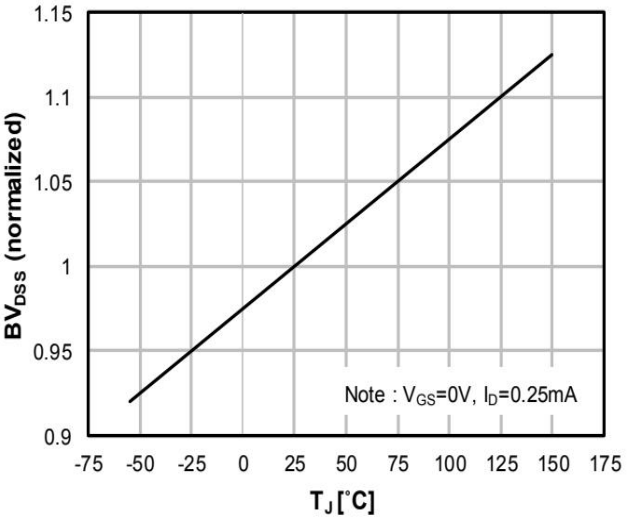




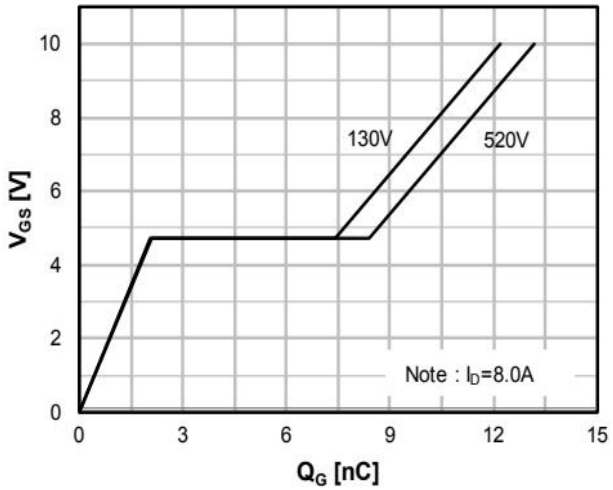


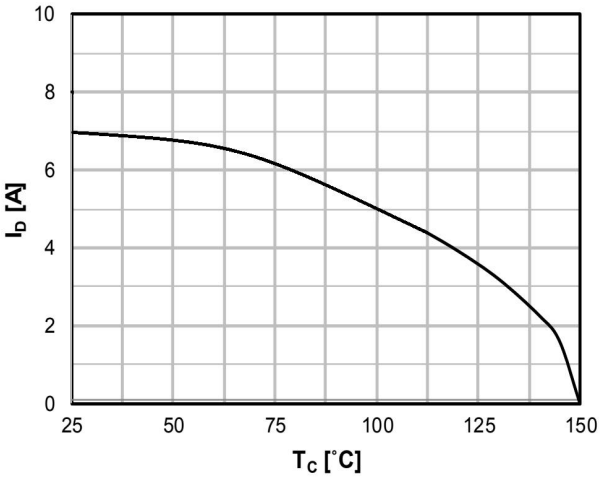


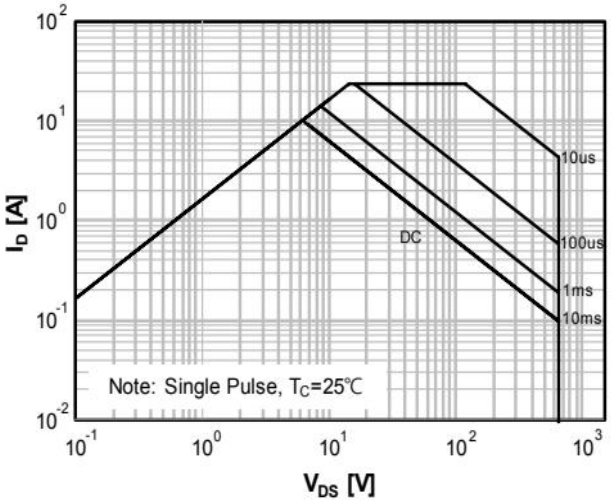


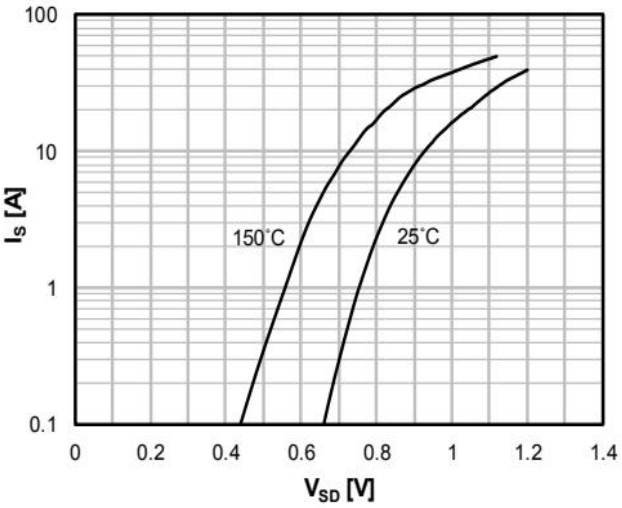


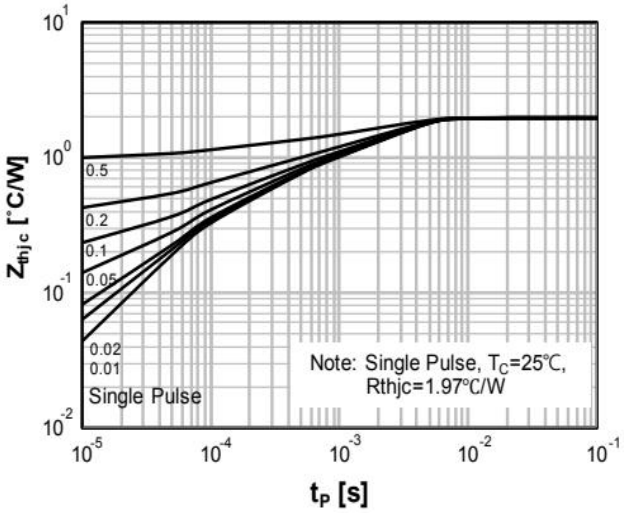
Ratings and Characteristic Curves



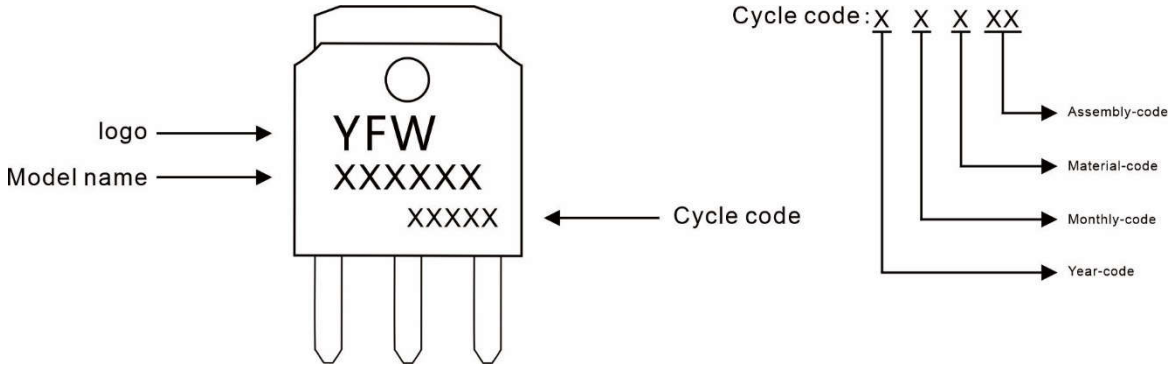








Marking Diagram

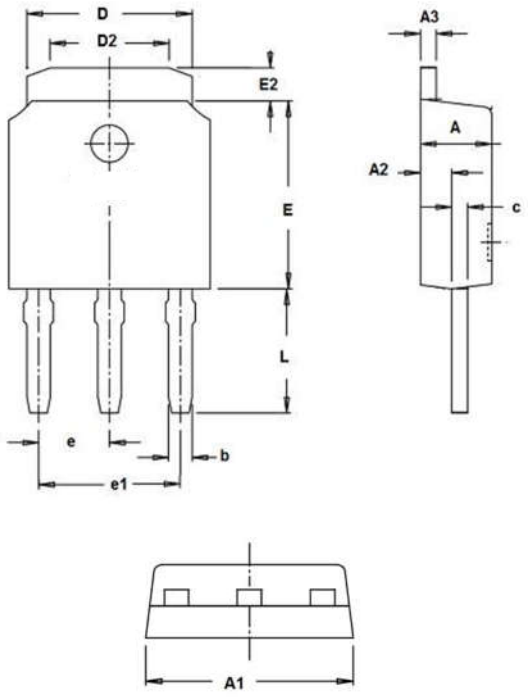


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R600AMJ	TO-251S	0.011oz(0.32g)	80pcs/tube	4000pcs/box 24000pcs/Carton

Package Dimensions

TO-251S



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.1	2.5	0.083	0.098
A1	6.3	6.9	0.248	0.271
A2	0.9	1.1	0.035	0.043
A3	TYP0.5		TYP0.019	
b	0.6	0.8	0.024	0.031
c	0.4	0.5	0.015	0.020
D	5.3	5.5	0.209	0.217
D2	3.65	4.05	0.144	0.159
E	5.8	6.4	0.228	0.252
E2	0.9	1.4	0.035	0.055
e	TYP2.29		TYP0.090	
e1	TYP4.58		TYP0.180	
L	3.7	4.3	0.146	0.169

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