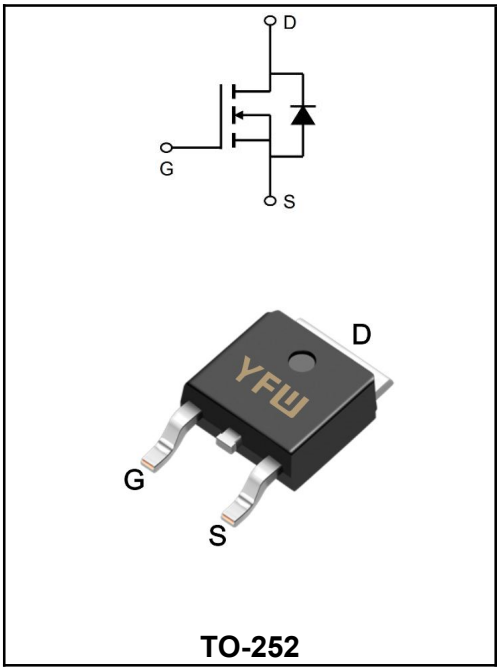
650V N-channel Super Junction MOSFET

MAIN CHARACTERISTICS

I_D	5A
V_{DS}	650V
R_{DSON}-typ(@V_{GS}=10V)	＜950mΩ(Typ:900mΩ)



TO-252

FEATURES

- Ultra low RDS(on)
- Ultra low gate charge (typ. Qg=10nC)
- 100% UIS tested

APPLICATIONS

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)

MECHANICAL DATA

- Case:TO-252/AD
- 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	5	A
Pulsed Drain Current (Note1)	I_{DM}	15	A
Power Dissipation	P_D	60	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	120	mJ
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.08	°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	$V_{GS(th)}$	2.5	3.67	4.5	V
Drain-Source On-State Resistance	V_{GS}=10V, I_D=2A	$R_{DS(ON)}$	-	900	950	mΩ
Input Capacitance	V_{DS}=100V V_{GS}=0V f=250KHz	C_{iss}	-	357	-	pF
Output Capacitance		C_{oss}	-	16	-	
Reverse Transfer Capacitance		C_{rss}	-	0.42	-	
Turn-on Delay Time(Note2)	V_{DD} = 400V I_D = 2A V_{GS} =10V R_G =10Ω	$t_{d(on)}$	-	26	-	ns
Rise Time(Note2)		T_r	-	11	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	25	-	
Fall Time(Note2)		t_f	-	35	-	
Total Gate Charge(Note2)	V_{DS} = 520V V_{GS} = 10V I_D = 2A	Q_g	-	10	-	nC
Gate to Source Charge(Note2)		Q_{gs}	-	1.9	-	
Gate to Drain Charge(Note2)		Q_{gd}	-	5	-	
Maximun Body-Diode Continuous Current		I_S	-	-	5	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	15	A
Drain-Source Diode Forward Voltage	V_{GS}=0V , I_S=2A , TJ=25℃	V_{SD}	-	-	1.1	V
Body Diode Reverse Recovery Time	V_R=400V,I_F=2A, dI/dt=100A/μs	t_{rr}	-	191	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	858	-	uC
Peak reverse recovery current		I_S	-	10.5	-	A

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

Ratings and Characteristic Curves

Fig 1: Output Characteristics

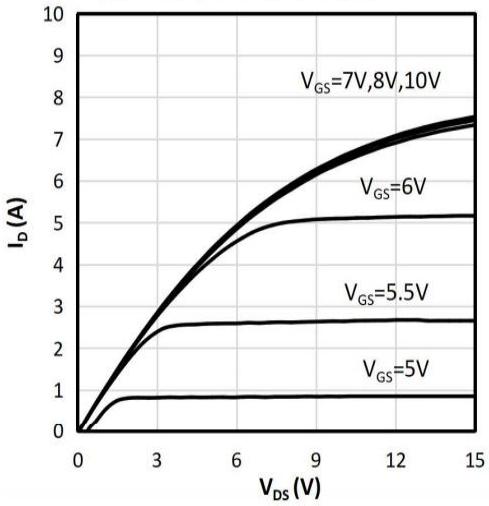


Fig 2: Transfer Characteristics

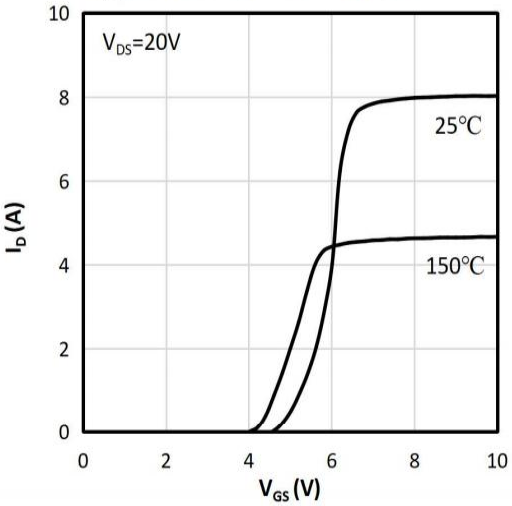


Fig 3: Rds(on) vs Drain Current

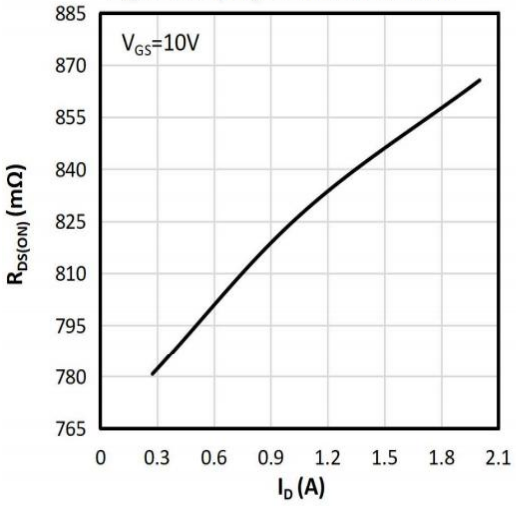


Fig 4: Rds(on) vs. Temperature

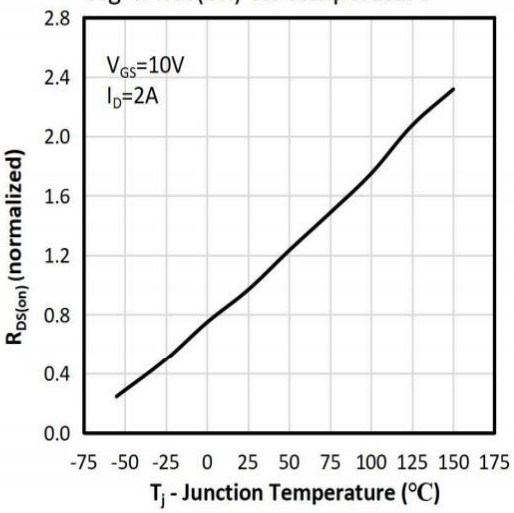


Fig 5: Breakdown Voltage vs. Temperature

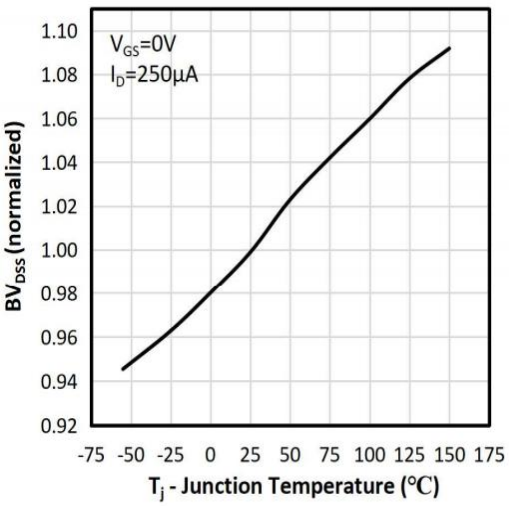
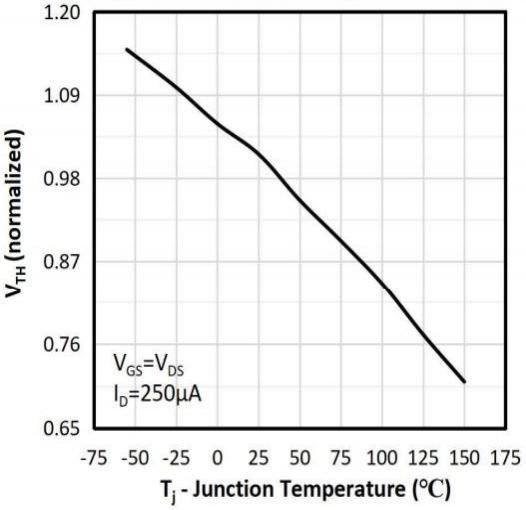


Fig 6: Threshold voltage vs. Temperature



Ratings and Characteristic Curves

Fig 7: Body-Diode Characteristics

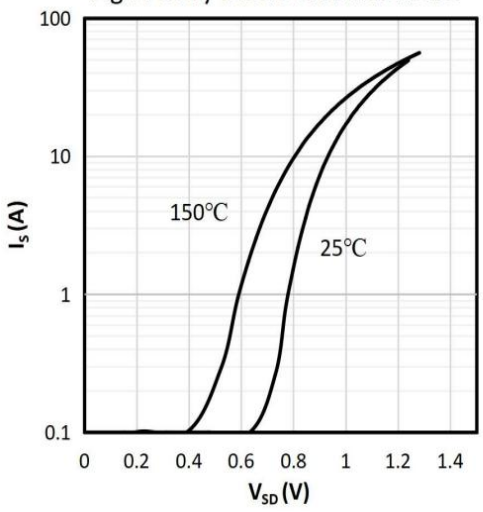


Fig 8: Capatitance Characteristics

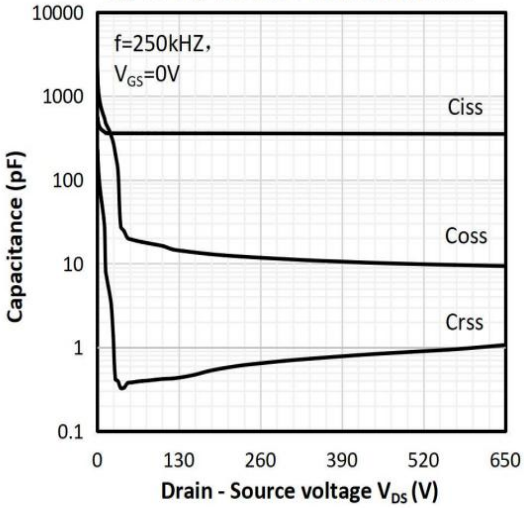


Fig 9: Gate charger Characteristics

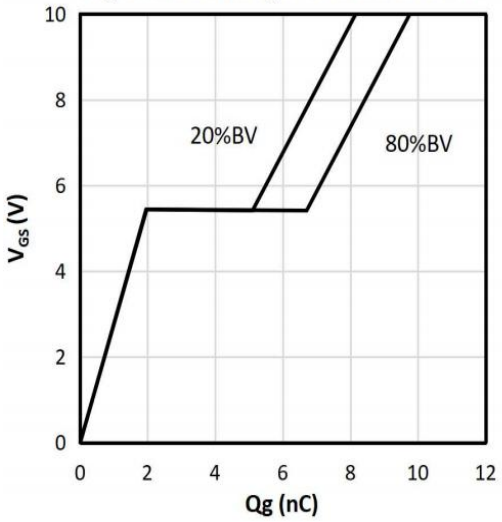


Fig 10: Drain Current Derating

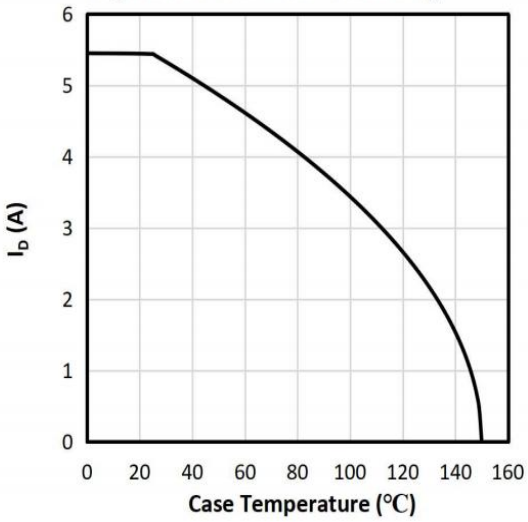


Fig 11: Power Dissipation vs.Temperature

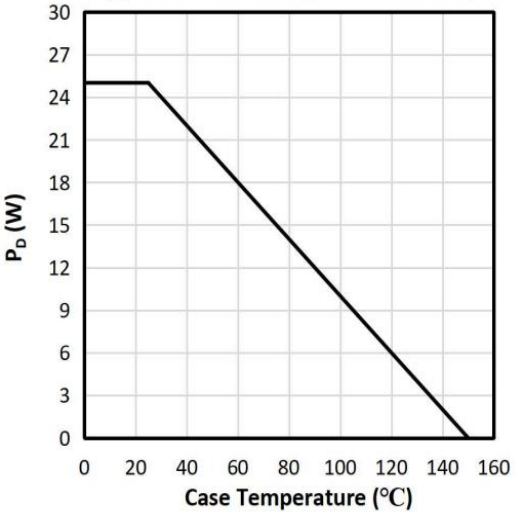
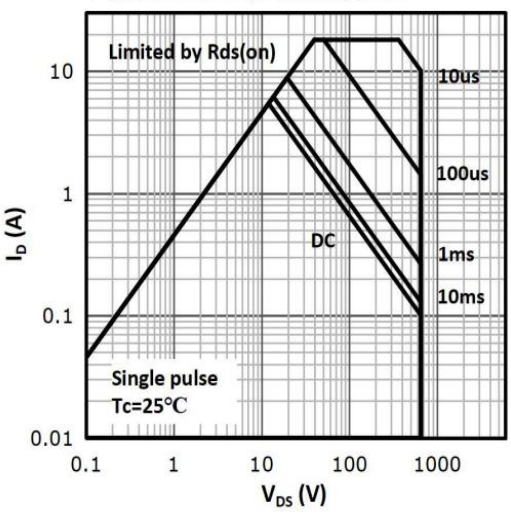
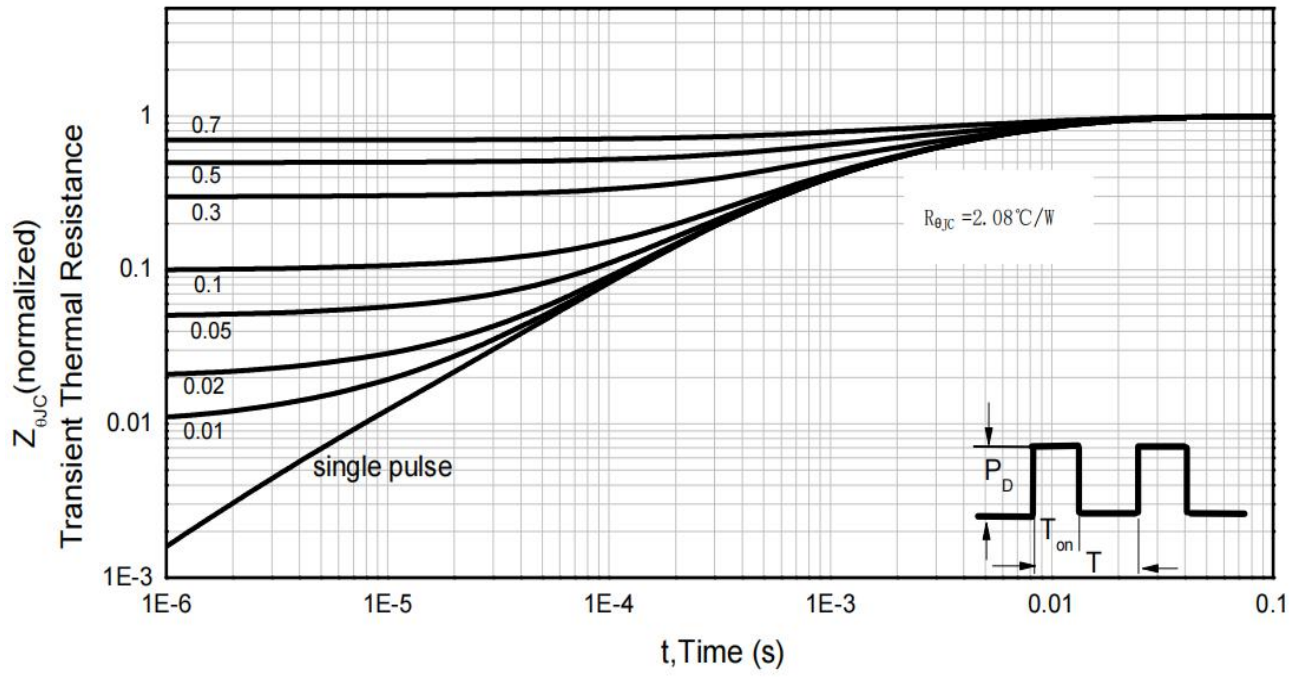


Fig 12: Safe Operating Area

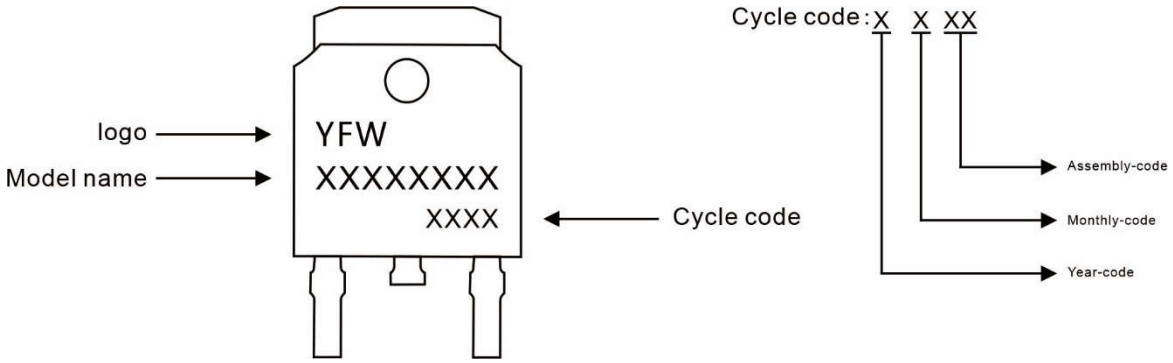


Ratings and Characteristic Curves

Figure 13: Normalized Maximum Transient Thermal Impedance (R_{thJC})



Marking Diagram

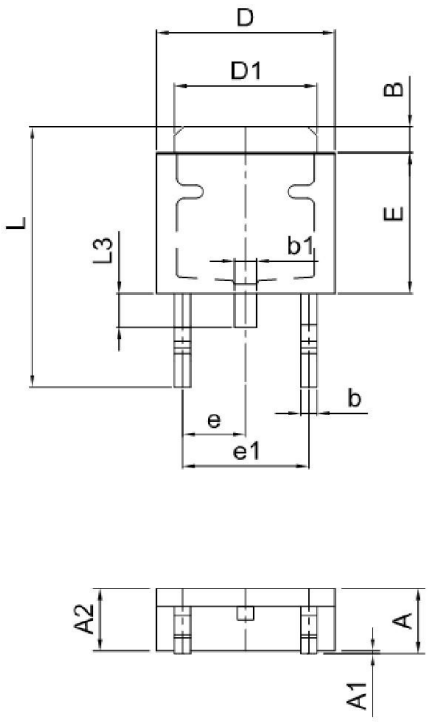


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R950AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

Package Dimensions

TO-252



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

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