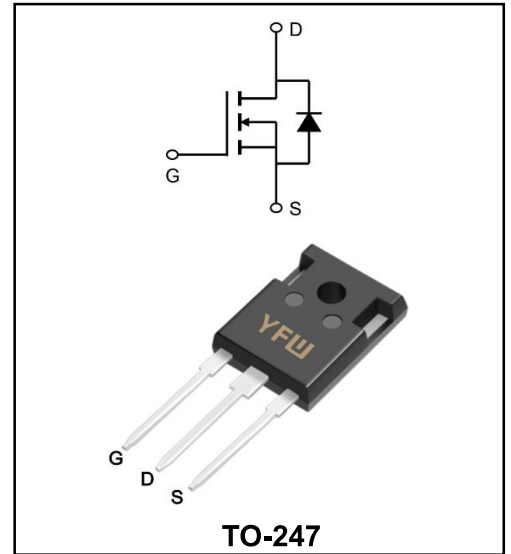


650V N-CHANNEL SUPER JUNCTION MOSFET

MAIN CHARACTERISTICS

I_D	36A
V_{DS}	650V
R_{DS(on)-typ(@V_{GS}=10V)}	<99mΩ(Typ:85mΩ)



FEATURES

- ◆ Low gate charge
- ◆ Low C_i
- ◆ Fast switchin
- ◆ 100% avalanche tested

APPLICATIONS

- ◆ APPLICATIONS
- ◆ LED/LCD/PDP TV and monitor Lighting
- ◆ Solar/Renewable/UPS-Micro Inverter System
- ◆ Charger
- ◆ Power Supply

MECHANICAL DATA

- ◆ Case: TO-247/AP
- ◆ 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°C maximum,10s per JESD 22-B106

Electrical Characteristics at T_c=25°C uni ess otherwise spec fied

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	36	A
Pulsed Drain Current (Note1)	I_{DM}	150	A
Power Dissipation	P_D	200	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	500	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_{θJC}	0.61	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	63	°C/W

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	V_{GS(th)}	2.9	-	4.9	v
Drain-Source On-State Resistance	$V_{GS} = 10\text{V}, I_D = 17\text{A}$	R_{DS(on)}		85	99	mΩ
Input Capacitance	$V_{DS} = 100\text{V},$ $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$	C_{iss}		1880		μF
Output Capacitance		C_{oss}		115		μF
Reverse Transfer Capacitance		C_{rss}		2		μF
Turn-on Delay Time(Note2)	$V_{DD} = 400\text{V}$ $I_D = 17\text{ A}$ $R_G = 27\Omega$	t_{d(on)}		50		ns
Rise Time(Note2)		T_r		80		ns
Turn-Off Delay Time(Note2)		t_{d(OFF)}		179		ns
Fall Time(Note2)		t_f		50		ns
Total Gate Charge(Note2)	$V_{DS} = 480\text{V}$ $V_{GS} = 10\text{V}$ $I_D = 17\text{ A}$	Q_g		69		nC
Gate to Source Charge(Note2)		Q_{gs}		17		nC
Gate to Drain Charge(Note2)		Q_{gd}		45		nC
Maximun Body-Diode Continuous Current		I_S	-	-	36	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	105	A
Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = 17\text{A},$ $T_J = 25^\circ\text{C}$	V_{SD}	-	-	1.5	V
Body Diode Reverse Recovery Time	$V_R = 400\text{V}, I_F = 17\text{A},$ $di/dt = 100\text{A}/\mu\text{s}$	T_{rr}	-	140	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}	-	0.9	-	nC

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

Ratings and Characteristic Curves

Fig 1. Output Characteristics (Tj=25°C)

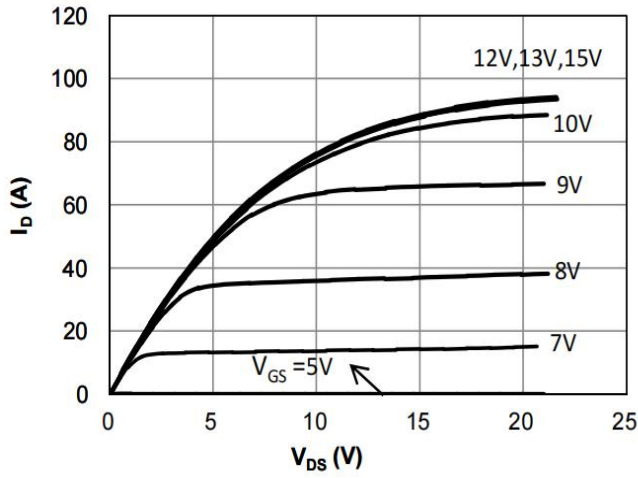


Fig 2. Output Characteristics (Tj=150°C)

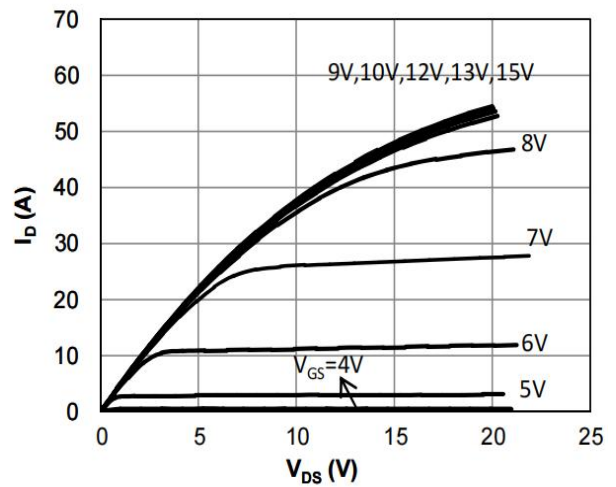


Fig 3: Transfer Characteristics

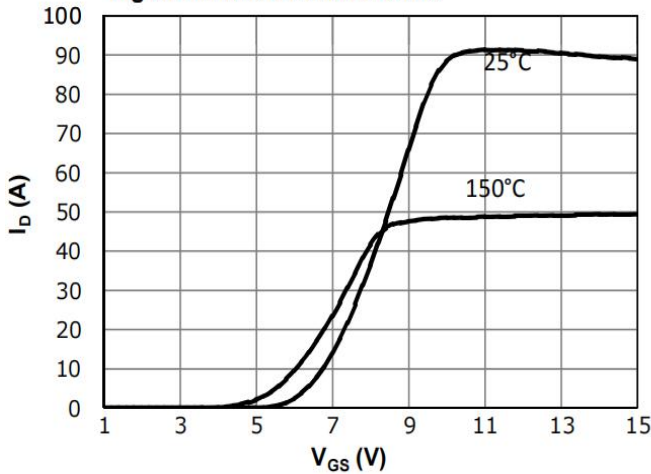


Fig 4: V_{TH} Vs T_j Temperature Characteristics

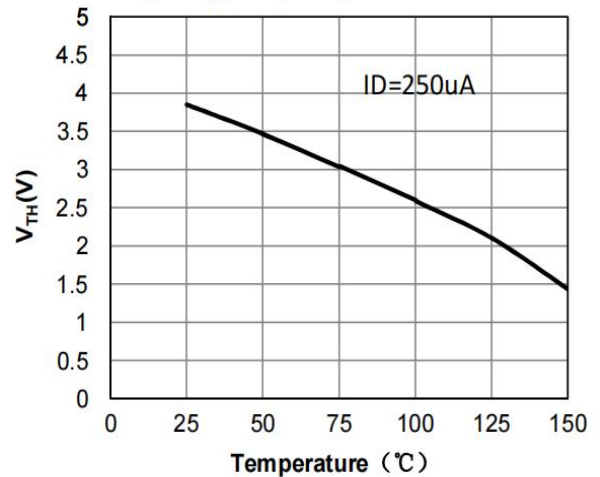


Fig 5: $R_{DS(on)}$ Vs I_{DS} Characteristics (Tj=25°C)

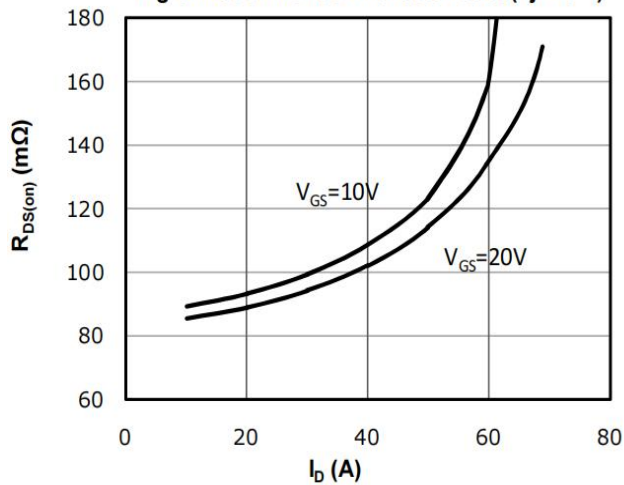
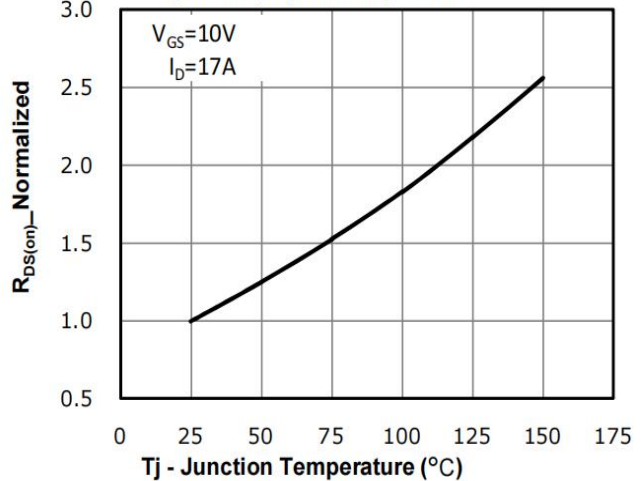


Fig 6: $R_{DS(on)}$ vs. Temperature



Ratings and Characteristic Curves

Fig 7: BVDSS vs. Temperature

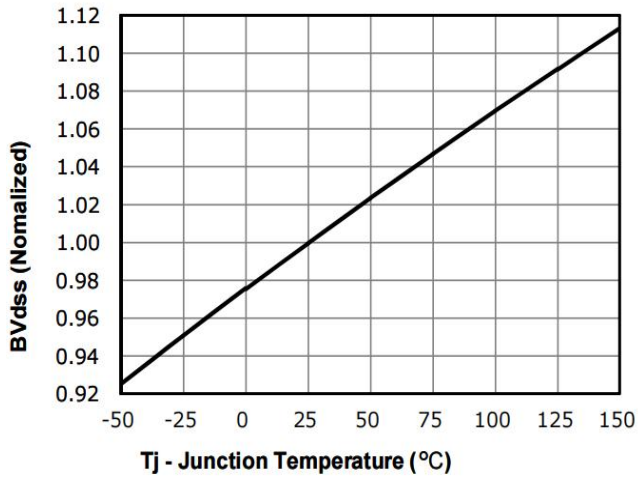


Fig 8: Rds(on) vs Gate Voltage

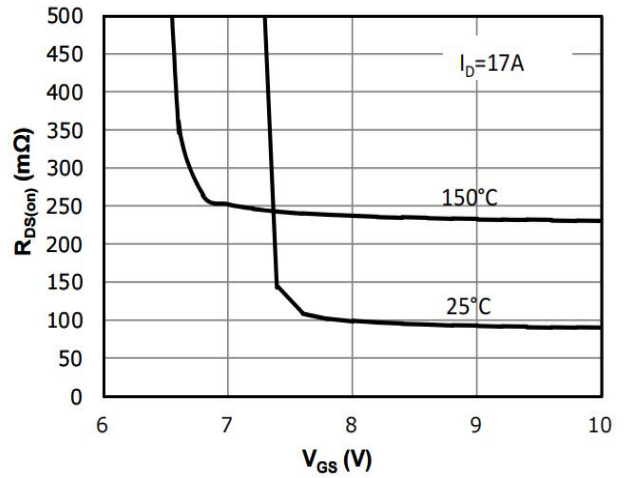


Fig 9: Body-diode Forward Characteristics

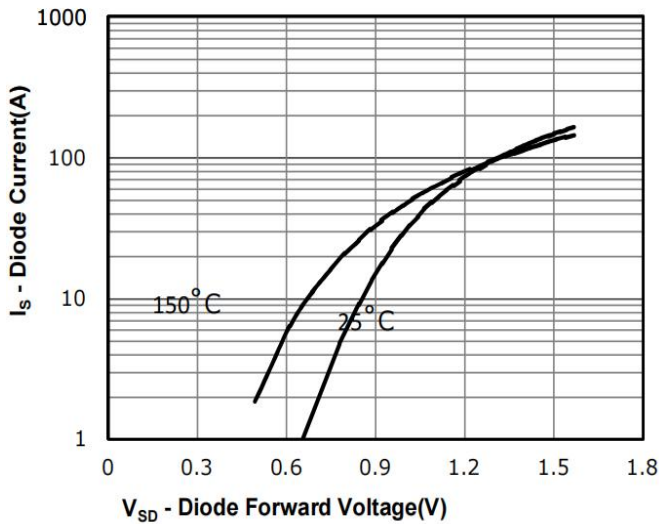


Fig 10: Gate Charge Characteristics

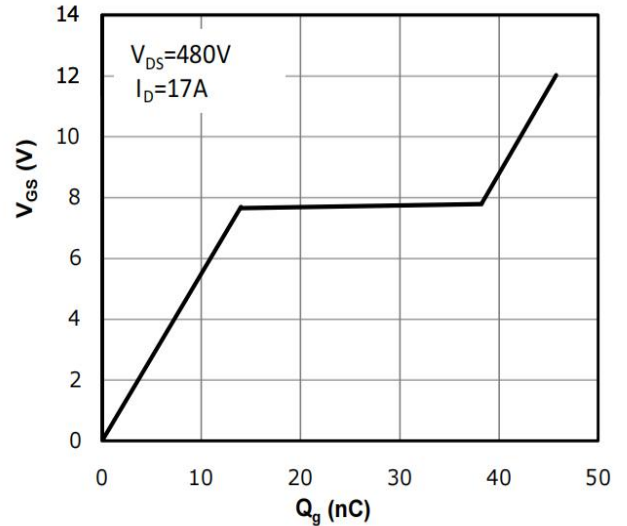


Fig 11: Capacitance Characteristics

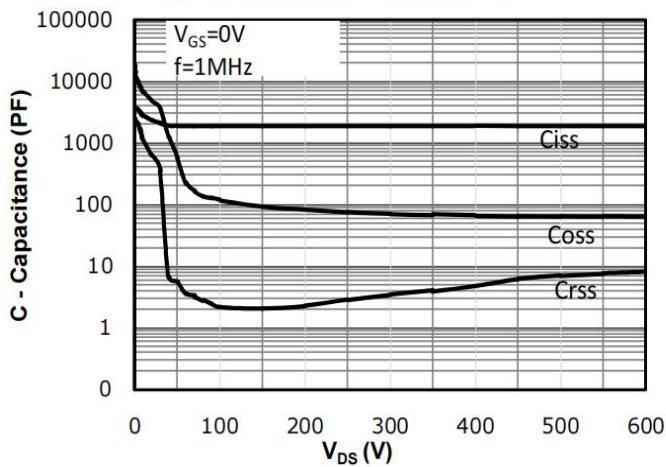
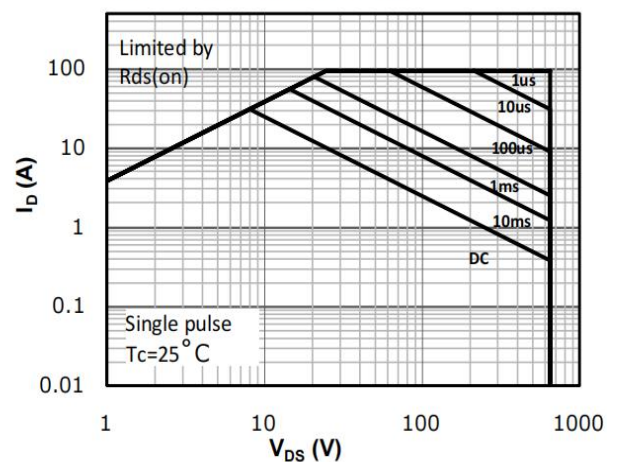
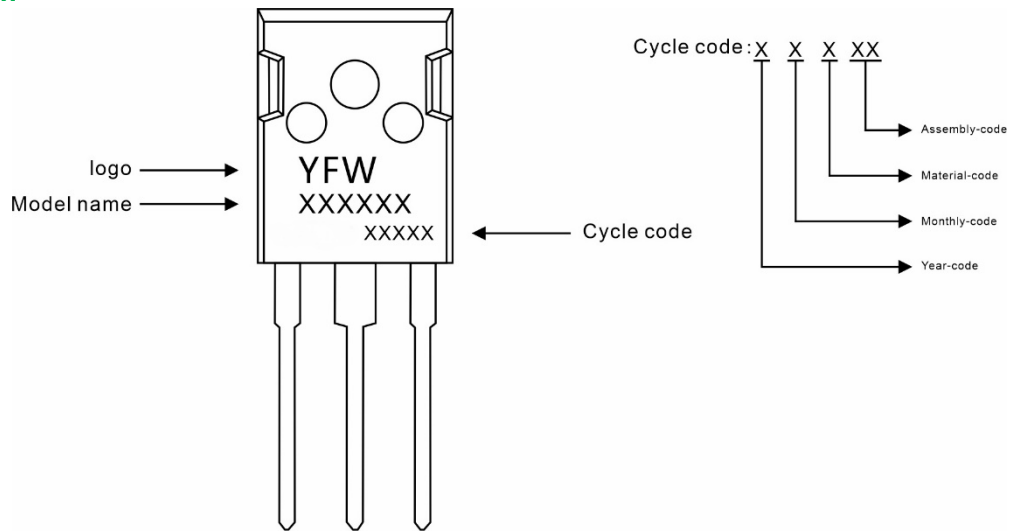


Fig 12: Safe Operating Area



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R085AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

Package Dimensions

TO-247

Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

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