

650V N-channel Super Junction MOSFET

MAIN CHARACTERISTICS

I_D	14A
V_{DSS}	650V
R_{DS(ON)-typ}(@V_{GS}=10V)	<280mΩ (Type:260mΩ)

FEATURES

Adopt advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

APPLICATIONS

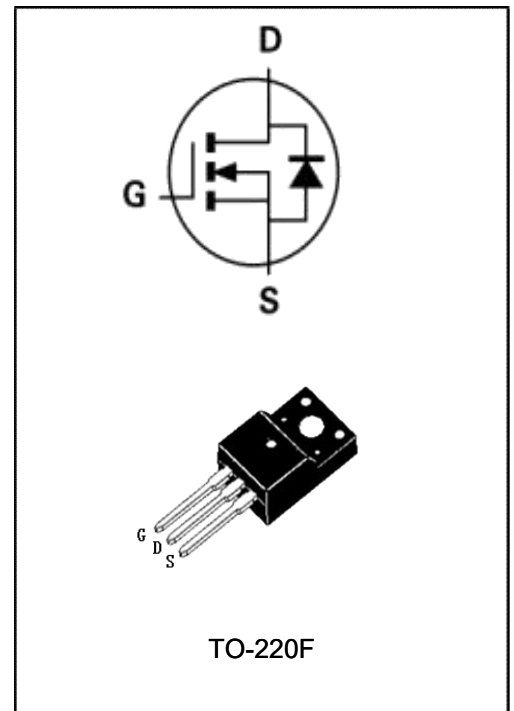
- † Solar inverters
- † LCD/LED/PDP TV
- † Telecom/Server Power supplies
- † AC-DC Power Supply

MECHANICAL DATA

- † Case: Molded plastic
- † 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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW65R280AF	TO-220F	YFW 65R280AF XXXXX	1000pcs/box



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
		220F	
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current	I_D	14	A
Pulsed Drain Current (Note1)	I_{DM}	41	A
Power Dissipation	P_D	104	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	290	mJ
Operating Temperature Range	T_J	-50 to +150	°C
Storage Temperature Range	T_{STG}	-50 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.2	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

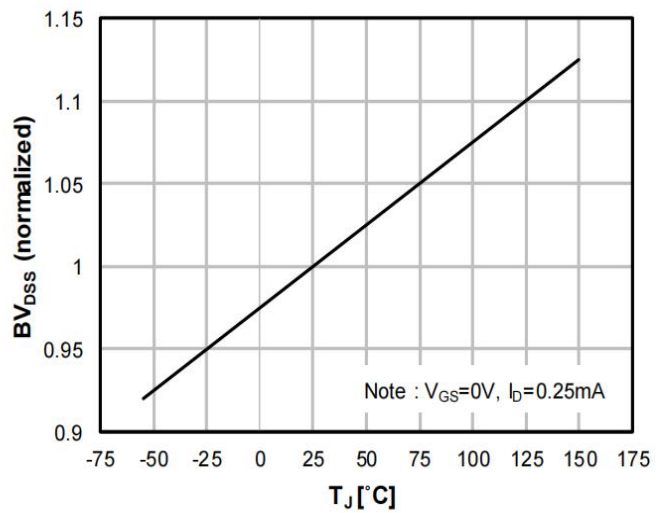
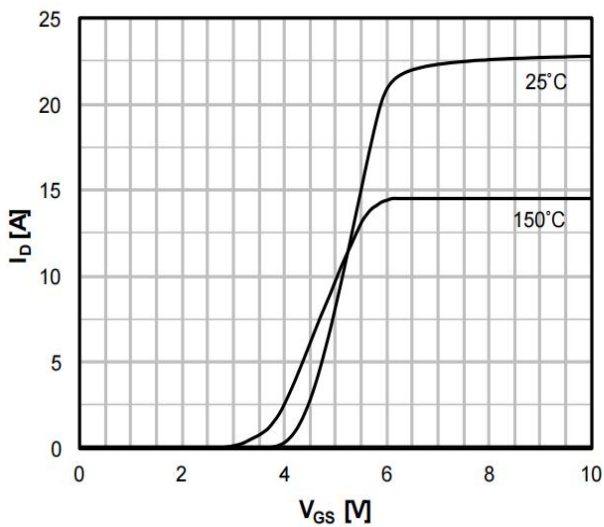
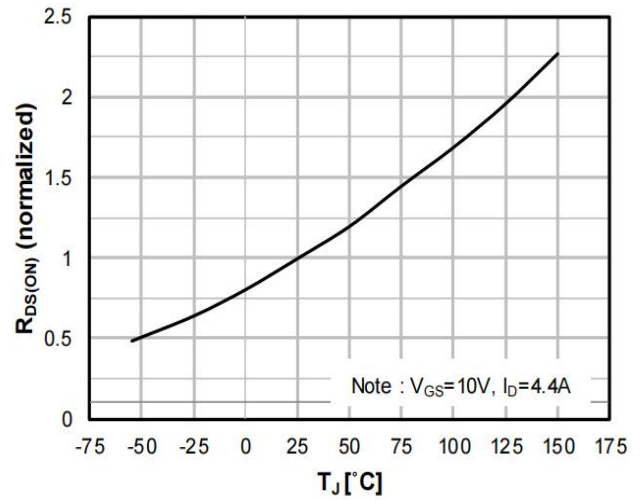
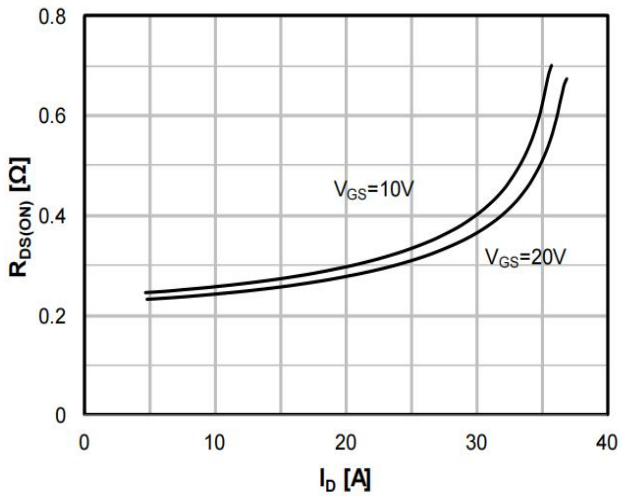
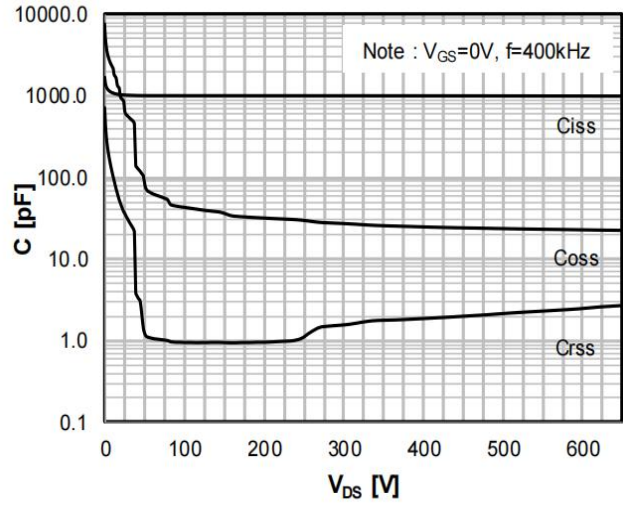
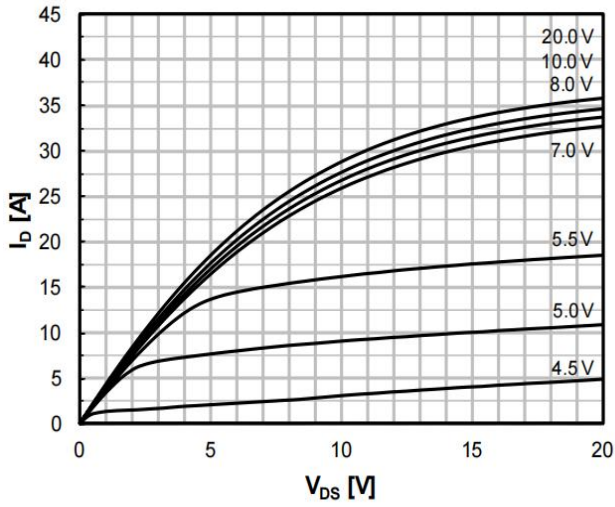
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10V, I_D = 4.4A$	$R_{DS(on)}$	-	260	280	m Ω
Input Capacitance	$V_{DS} = 50V, V_{GS} = 0V, f = 400KHz$	C_{iss}	-	1020	-	pF
Output Capacitance		C_{oss}	-	79	-	pF
Reverse Transfer Capacitance		C_{rss}	-	1.2	-	pF
Turn-on Delay Time(Note2)	$V_{DD} = 325V, I_D = 13.8 A, V_{GS} = 10V, R_G = 25\Omega$	$t_{d(ON)}$	-	19	-	ns
Rise Time(Note2)		t_r	-	34	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	76	-	ns
Fall Time(Note2)		t_f	-	27	-	ns
Total Gate Charge(Note2)	$V_{DS} = 520V, V_{GS} = 10V, I_D = 13.8 A$	Q_G	-	23	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	9	-	nC

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

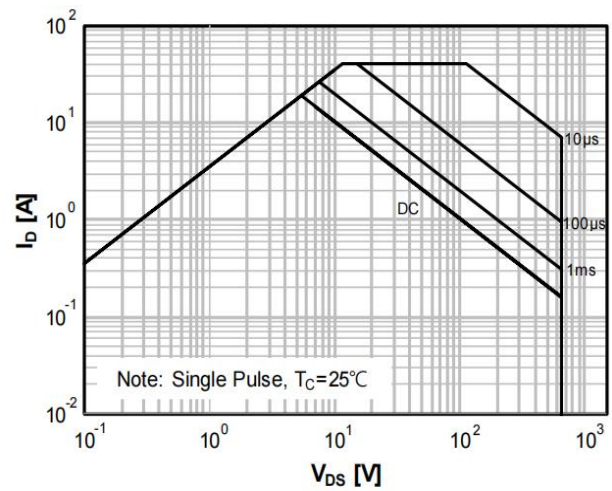
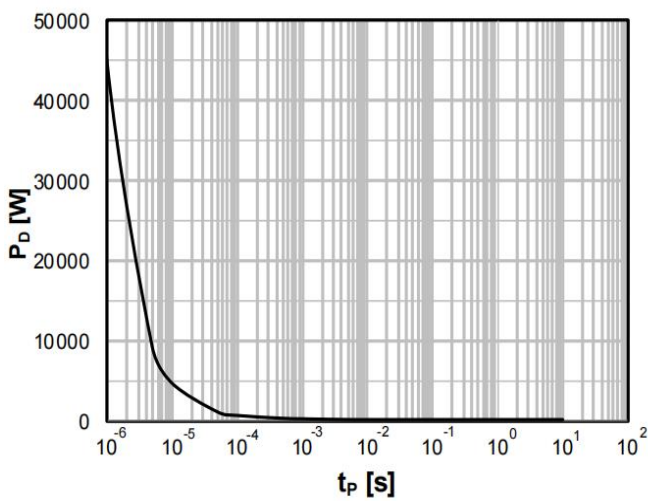
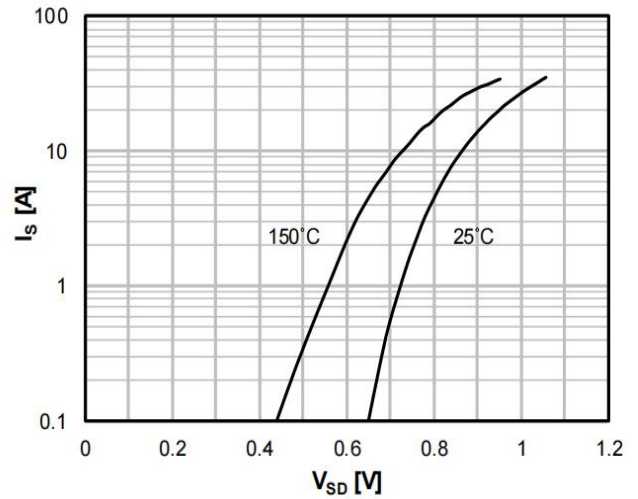
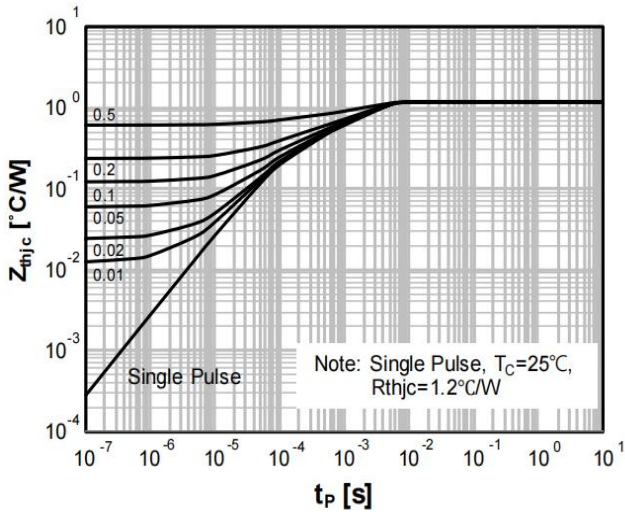
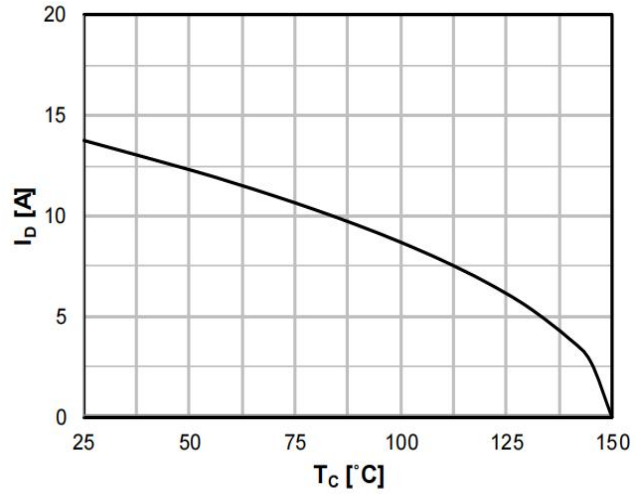
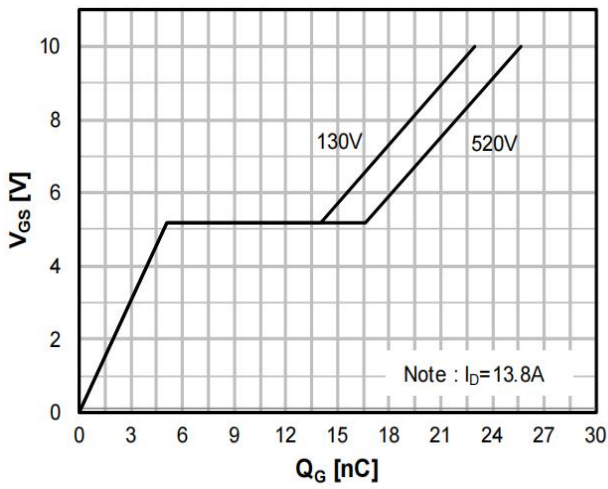
Characteristics	Test Condition	Symbo	Min.	Typ.	Max.	Unit
Reverse recovery time	$I_S = 13.8A, V_{DD} = 100V, di/dt = 100A/us$	t_{rr}	-	299	-	ns
Reverse recovery current		I_{rr}	-	24	-	A
Reverse recovery charge		Q_{rr}	-	3.6	-	μC
Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 13.8A, T_J = 25$	V_{SD}	-	1.4	-	V

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

Ratings and Characteristic Curves



Ratings and Characteristic Curves



Package Outline Dimensions Millimeters

TO-220F

	Dim.	Min.	Max.
	A	9.95	10.25
	B	2.95	3.25
	C	1.25	1.45
	D	12.95	13.25
	E	0.50	0.65
	F	3.1	3.3
	G	1.30	1.45
	H	Typ 2.54	
	I	Typ 5.08	
	J	4.60	4.75
	K	2.50	2.65
	L	6.35	6.55
	M	15.4	16.0
	N	2.75	3.05
	O	0.48	0.52
P	0.76	0.84	
All Dimensions in millimeter			