

150V N-CHANNEL ENHANCEMENT MODE MOSFET
MAIN CHARACTERISTICS

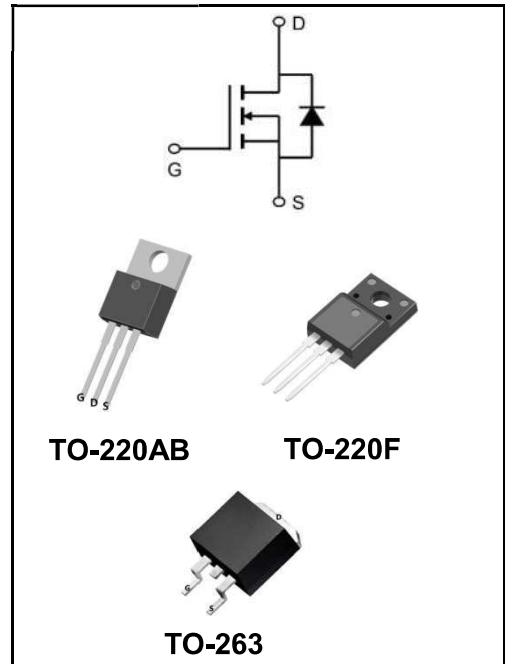
I_D	190A
V_{DSS}	150V
R_{DS(on)-typ(@V_{GS}=10V)}	< 7.5mΩ (Type:6.6 mΩ)

Features

♦ YFW-SGT technology

Application

- ♦ DC/DC Converter
- ♦ LED Backlighting
- ♦ Power Management Switches


Product Specification Classification

Part Number	Package	Marking	Pack
YFWG190N15AT	TO-220AB	YFW 190N15AT XXXXX	1000PCS/Box
YFWG190N15AF	TO-220F	YFW 190N15AF XXXXX	1000PCS/Box
YFWG190N15AS	TO-263	YFW 190N15AS XXXXX	800PCS/Reel

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	150	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current, V _{GS} @ 10V @T _c =25°C	I_D	190	A
Continuous Drain Current, V _{GS} @ 10V @T _c =100°C	I_D	140	A
Pulsed Drain Current	I_{DM}	550	A
Single Pulse Avalanche Energy	E_{AS}	506	mJ
Avalanche Current	I_{AS}	53.4	A
Total Power Dissipation ⁴ @T _c =25°C	P_D	210	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction-Ambient	R_{θJA}	0.84	°C/W
Thermal Resistance Junction-Case	R_{θJC}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	VDSS	150	-	-	V
Gate-body Leakage current	$V_{GS}=\pm 20V, V_{DS}=0V$	IGSS	-	-	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	IDSS	-	-	1	μA
	$V_{DS}=100V, V_{GS}=0V, T_J=100^\circ C$		-	-	100	
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	VGS(th)	2.0	2.9	4.0	V
Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=20A$	RDS(ON)	-	6.6	7.5	mΩ
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=1MHz$	Ciss	-	5240	-	μF
Output Capacitance		Coss	-	412	-	
Reverse Transfer Capacitance		Crss	-	10	-	
Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	Rg	-	1.7	-	nC
Total Gate Charge	$V_{GS}=10V$ $V_{DS}=50V$ $I_D=20A$	Qg	-	18	-	
Gate-Source Charge		Qgs	-	10	-	
Gate-Drain Charge		Qgd	-	72	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=3\Omega$ $I_D=20A$	td(on)	-	22	-	ns
Rise Time		Tr	-	115	-	
Turn-Off Delay Time		td(OFF)	-	44	-	
Fall Time		tf	-	105	-	
Diode Forward Voltage ²	$I_F=20A, V_{GS}=0V$	VSD	-	-	1.2	V
Continuous Source Current ^{1,5}	$V_G=V_D=0V, \text{Force Current}$	IS	-	-	190	A
Body Diode Reverse Recovery Time	$I_F=20A, dI/dt=100A/\mu s$	trr	-	45	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	12	-	nC

Notes:

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=45A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

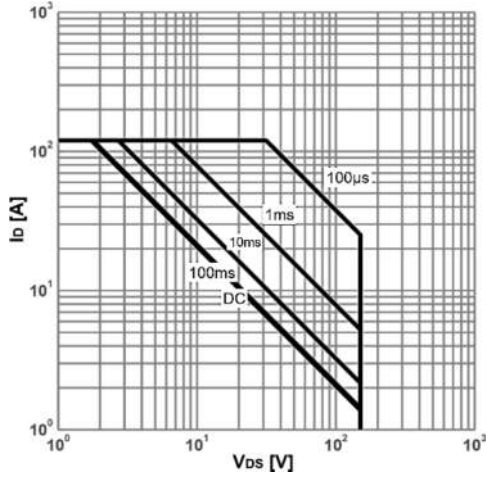


Figure 1. Power dissipation

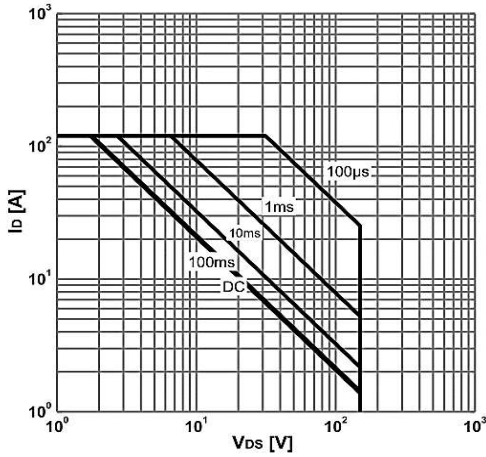


Figure 3. Safe operating area

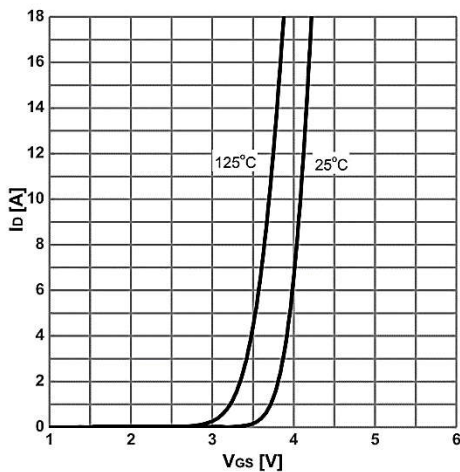


Figure 5. Typ. transfer characteristics

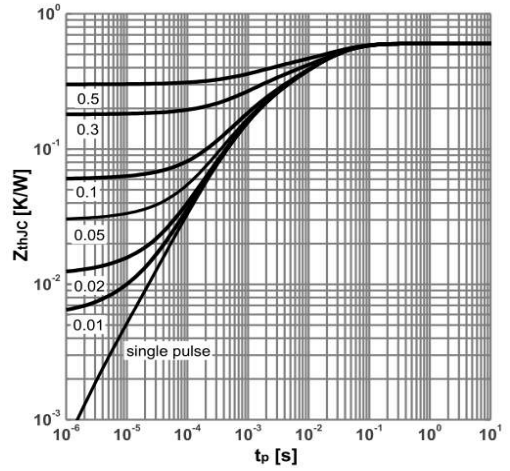


Figure 2. Max. transient thermal impedance

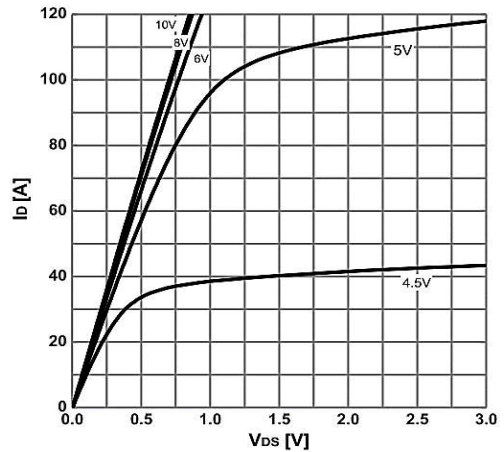


Figure 4. Typ. output characteristics

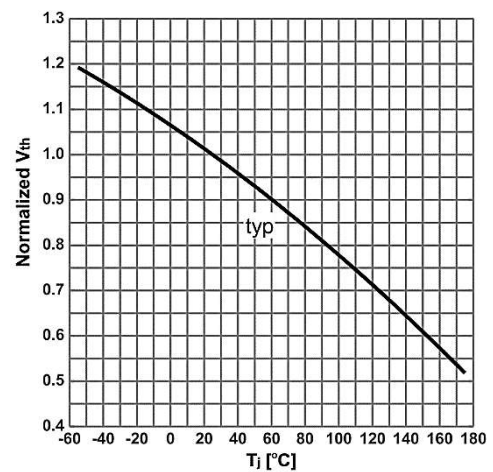


Figure 6. Gate threshold voltage vs. Junction Temperature

Ratings and Characteristic Curves

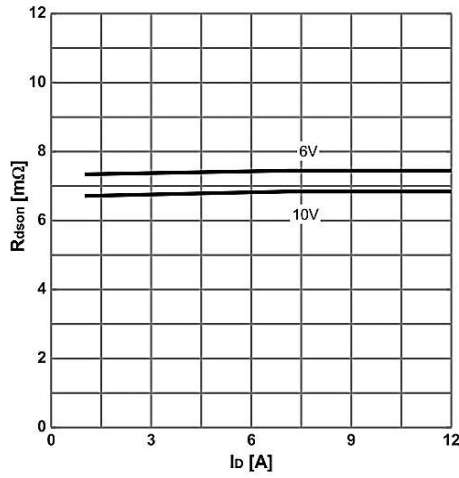


Figure 7. On-state resistance vs. Drain current

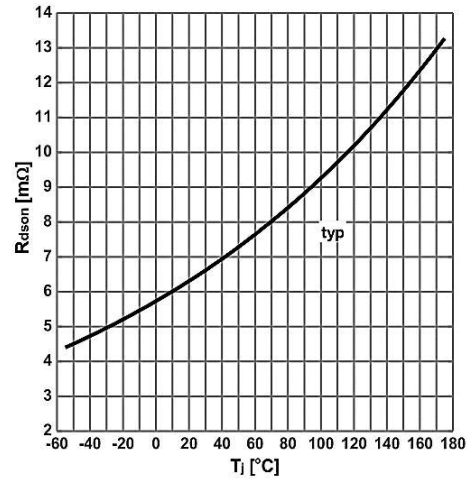


Figure 8. On-state resistance vs. Junction temperature

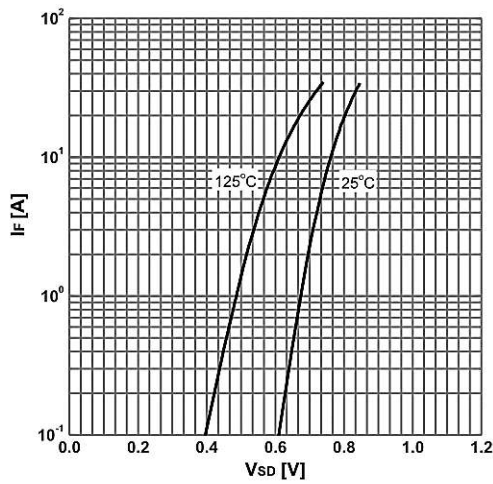


Figure 9. Forward characteristics of reverse diode

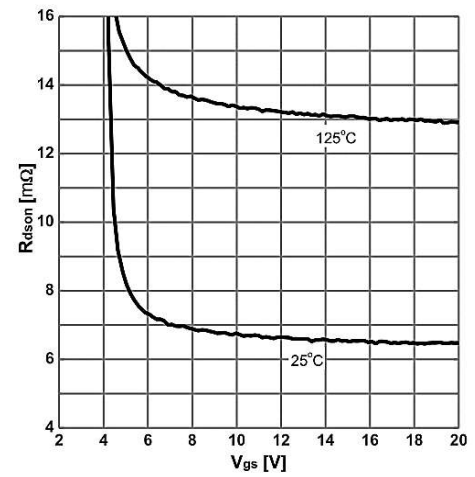


Figure 10. On-state resistance vs. Vgs characteristics

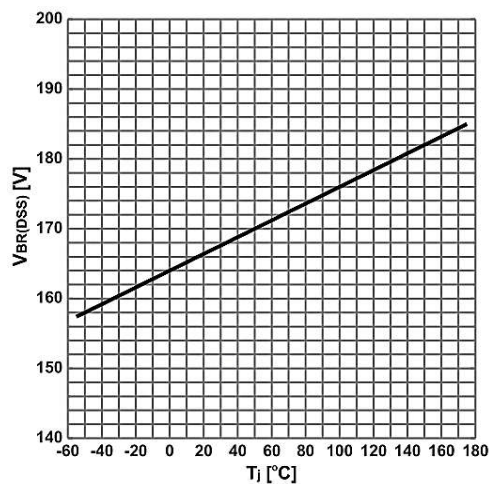


Figure 10: Breakdown Voltage Variation vs. Temperature

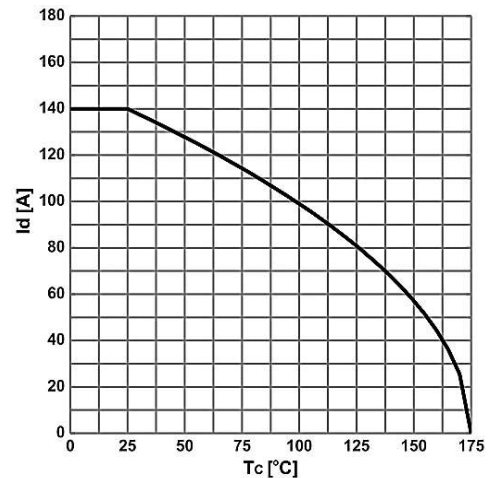


Figure 11: Maximum Drain Current

Package Outline Dimensions Millimeters

TO-220AB

	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.65	2.95
	C	3.70	3.90
	D	28.5	29.5
	E	1.30	1.45
	F	6.35	6.55
	G	2.9	3.3
	H	15.0	16.0
	I	0.38	0.42
	J	4.45	4.55
	K	1.25	1.35
	L	Typ 5.08	
	M	Typ 2.54	
N	3.1	3.3	
O	0.76	0.84	
All Dimensions in millimeter			

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			

Package Outline Dimensions Millimeters

TO-263

Dim.	Min.	Max.
A	10.1	10.2
B	7.4	7.6
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.78	0.86
H	1.2	1.3
I	Typ2.54	
J	8.4	8.6
K	4.45	4.55
L	1.25	1.35
M	0.02	0.1
N	2.4	2.8
O	0.36	0.40
All Dimensions in millimeter		