

40V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	260A
V_{DSS}	40V
$R_{DS(on)-typ}(@V_{GS}=10V)$	$<2.1m\Omega$ (Typ:1.9 m Ω)

APPLICATIONS

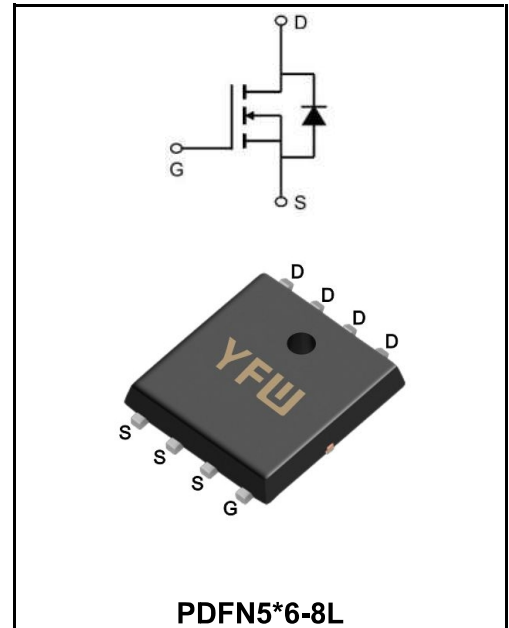
- ♦ Ultra-low RDS(ON)
- ♦ High Current Capability
- ♦ **YFW-SGT technology**

APPLICATIONS

- ♦ Battery protection
- ♦ Load switch
- ♦ Uninterruptible 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



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	260	A
Pulsed Drain Current (Note1)	I_{DM}	1040	A
Total Power Dissipation	P_D	138	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	600	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.9	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	°C/W

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

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	40	-	-	V
Drain-Source Leakage Current	$V_{DS} = 40V, V_{GS} = 0V$	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	-	3.5	V
Drain-Source on-Resistance	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	1.9	2.1	m Ω
Input Capacitance	$V_{DS}=20V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	5300	-	pF
Output Capacitance		C_{oss}	-	3600	-	
Reverse Transfer Capacitance		C_{rss}	-	86	-	
Turn-on delay time	$V_{DD}=20V$ $V_{GS}=10V$ $R_G=6\Omega$ $I_D=20A$	$t_{d(on)}$	-	20	-	ns
Rise Time		T_r	-	37	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	60	-	
Fall Time		t_f	-	28	-	
Total Gate Charge	$V_{DS}=20V$ $V_{GS}=10V$ $I_D=20A$	Q_g	-	71	-	nC
Gate-Source Charge		Q_{gs}	-	22	-	
Gate-Drain Charge		Q_{gd}	-	11.7	-	
Maximun Body-Diode Continuous Current		I_S	-	-	260	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	1040	A
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=50A, T_J=25^\circ C$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time(Note2)	$I_S = I_F, I_{SD}=20A, V_{GS} = 0V,$ $dI / dt = 100A/\mu s$	t_{rr}	-	75	-	ns
Body Diode Reverse Recovery Charge(Note2)		Q_{rr}	-	67	-	nC

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

Ratings and Characteristic Curves

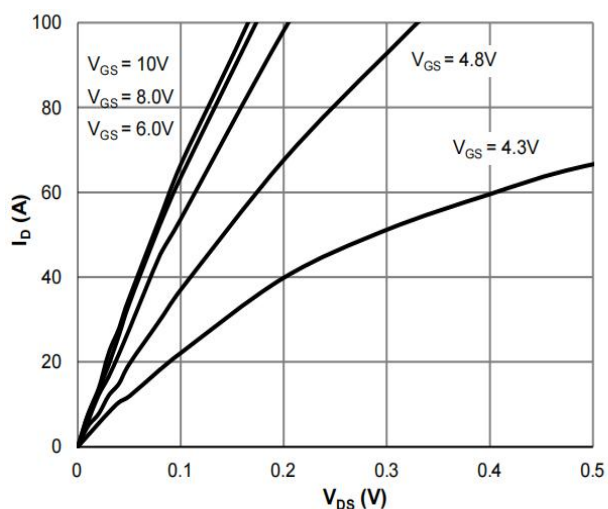


Figure 1: Saturation Characteristics

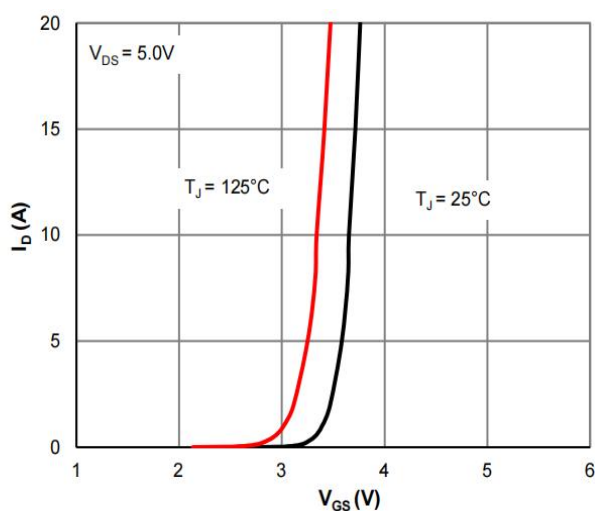


Figure 2: Transfer Characteristics

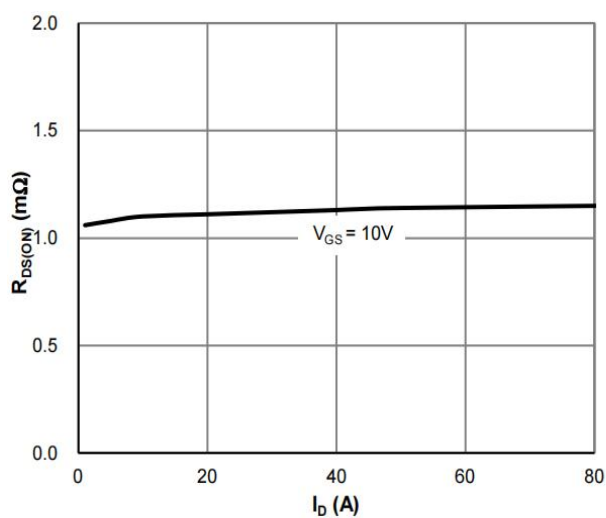


Figure 3: $R_{DS(ON)}$ vs. Drain Current

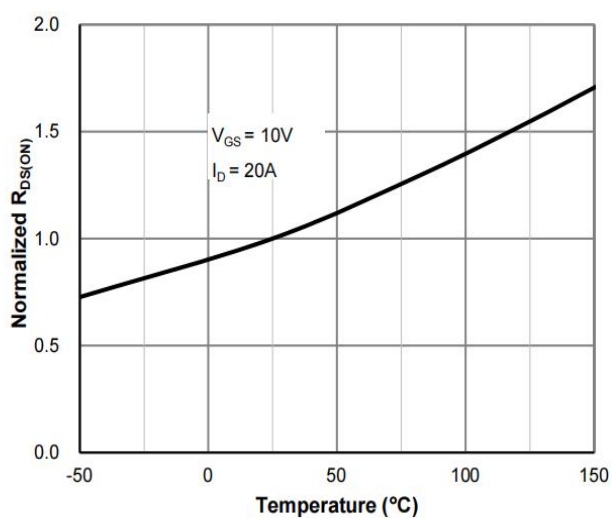


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

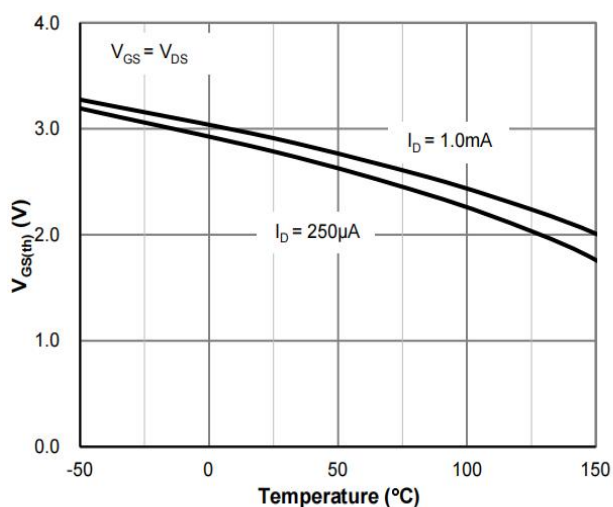


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

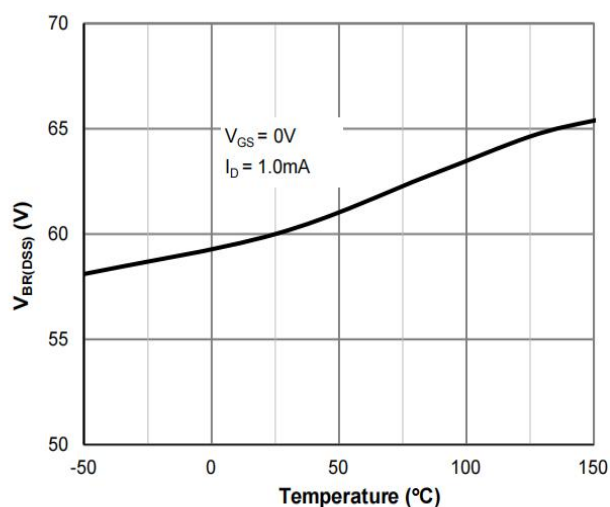


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

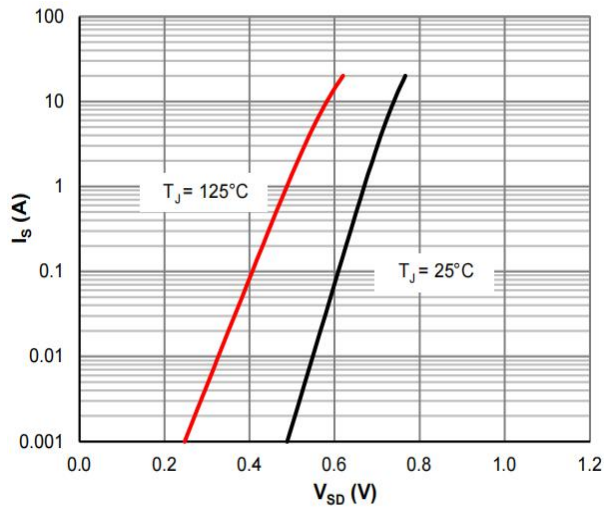


Figure 7: Body-Diode Characteristics

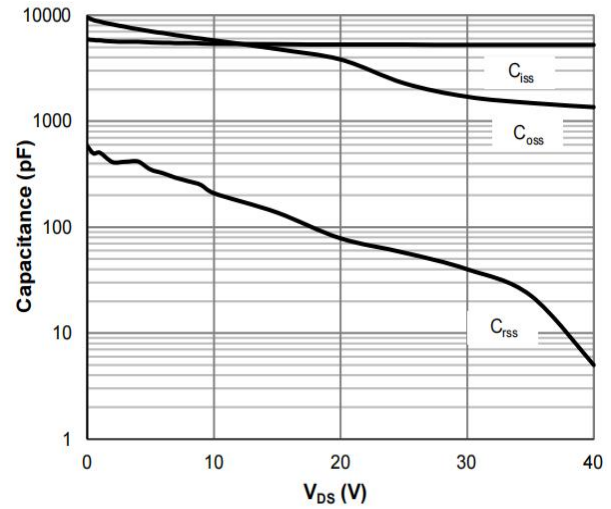


Figure 8: Capacitance Characteristics

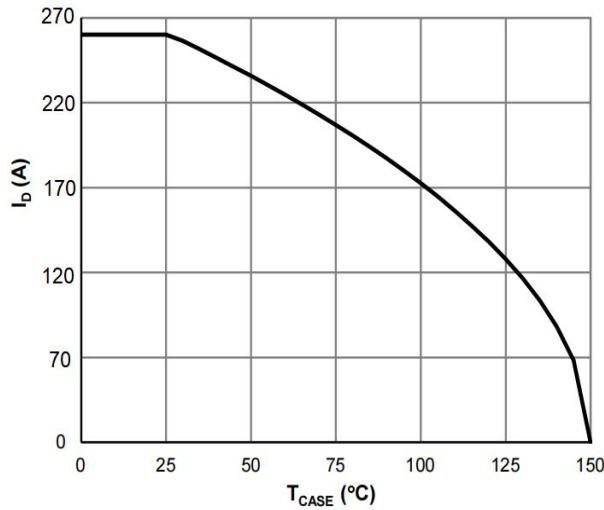


Figure 9: Current De-rating

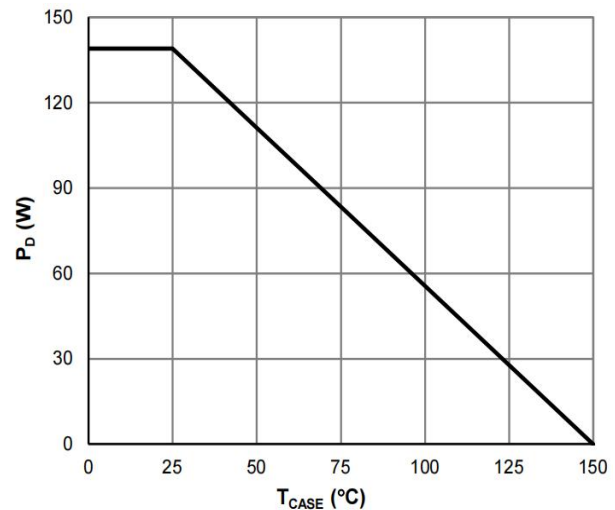


Figure 10: Power De-rating

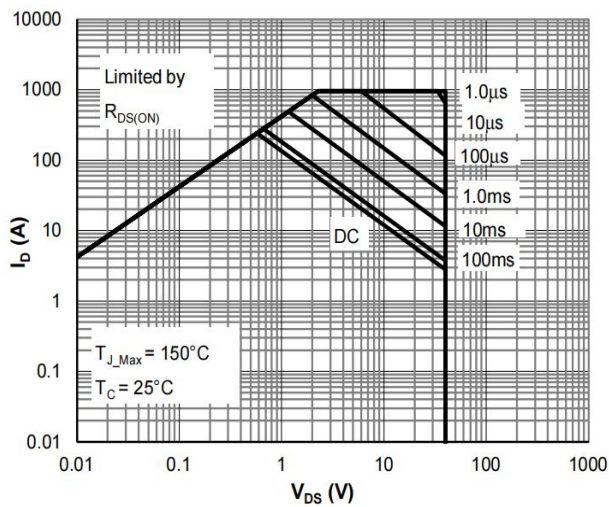


Figure 11: Maximum Safe Operating Area

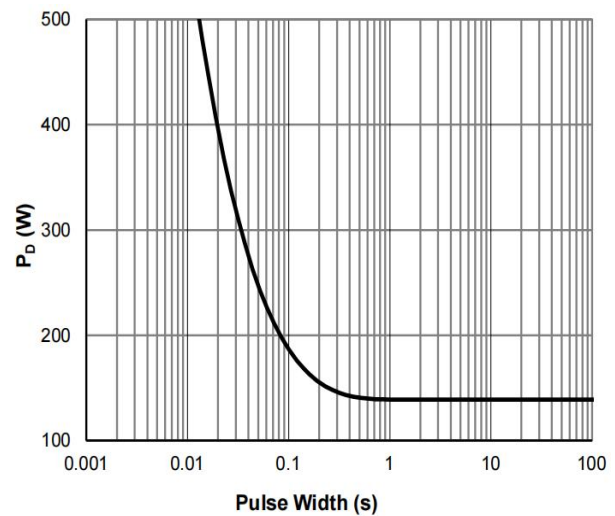
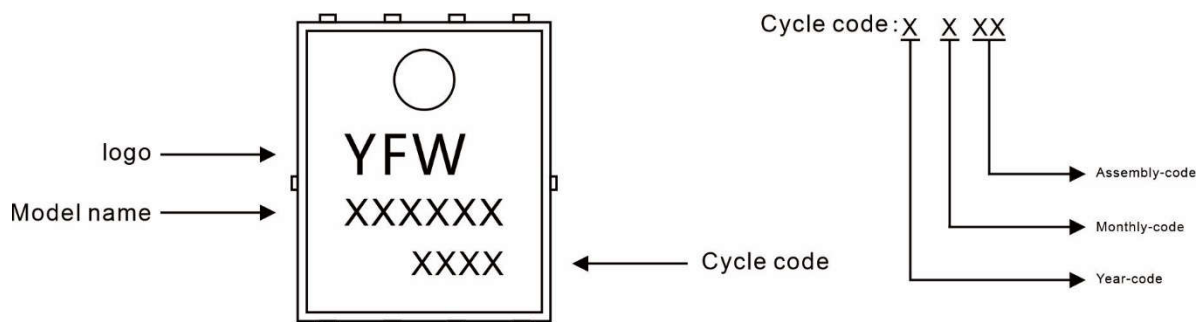


Figure 12: Single Pulse Power Rating, Junction-to-Case

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG260N04NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	45
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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