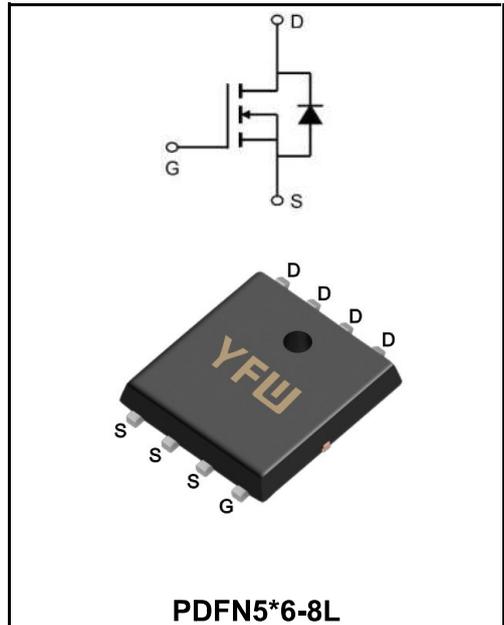


40V N-Channel Trench Power MOSFET

MAIN CHARACTERISTICS

I_D	60A
V_{DS}	40V
R_{DS(on)-typ(@V_{GS}=10V)}	< 10mΩ (Typ: 8mΩ)



FEATURES

- ◆Advanced Trench Technology
- ◆Provide Excellent R_{DS(ON)} and Low Gate Charge
- ◆Lead free product is acquired

APPLICATION

- ◆Load Switch
- ◆PWM Application
- ◆Power management

MECHANICAL DATA

- ◆Case: PDFN5x6-8L/NF
- ◆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 T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	60	A
Pulsed Drain Current(Note1)	I_{DM}	240	A
Total Power Dissipation	P_D	35	W
Single Pulse Avalanche Energy	E_{AS}	48	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction-case(Note2)	R_{θJC}	3.6	°C/W
Thermal Resistance, Junction ambient	R_{θJA}	37	°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}	40	-	-	V
Drain-Source Leakage Current	$V_{DS} = 40\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 30\text{ A}$	$R_{DS(ON)}$	-	8	10	mΩ
	$V_{GS} = 4.5\text{ V}, I_D = 20\text{ A}$		-	10	13	
Input Capacitance	$V_{GS} = 0\text{ V}$ $V_{DS} = 20\text{ V}$ $f = 1\text{ MHz}$	C_{iss}	-	1910	-	pF
Output Capacitance		C_{oss}	-	130	-	
Reverse Transfer Capacitance		C_{rss}	-	105	-	
Turn-on Delay Time	$V_{DS}=20\text{V}$ $I_D=20\text{A}$ $V_{GS}=10\text{V}$ $R_G=3\Omega$	$t_{d(on)}$	-	8	-	ns
Rise Time		T_r	-	28	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	36	-	
Fall Time		t_f	-	6	-	
Total Gate Charge	$V_{DS}=20\text{V}$ $I_D=20\text{A}$ $V_{GS}=10\text{V}$	Q_g	-	37	-	nC
Gate to Source Charge		Q_{gs}	-	8	-	
Gate to Drain Charge		Q_{gd}	-	7	-	
Maximun Body-Diode Continuous Current (Note 2)		I_S	-	-	60	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	240	A
Drain-Source Diode Forward Voltage	$I_{SD} = 30\text{A}$	V_{SD}	-	-	1.2	V
Reverse Recovery Time	$I_S = I_F, I_{SD} = 20\text{A}, V_{GS} = 0\text{ V},$ $dI / dt = 100\text{ A}/\mu\text{s}$	t_{rr}	-	10	-	ns
Reverse Recovery Charge		Q_{rr}	-	5	-	μC

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

Ratings and Characteristic Curves

Figure 1: Output Characteristics

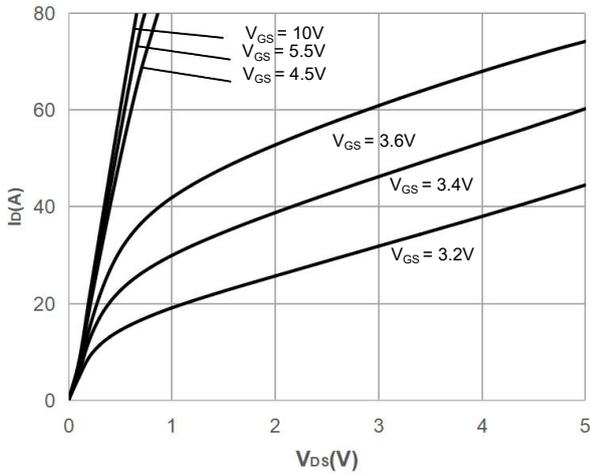


Figure 2: Typical Transfer Characteristics

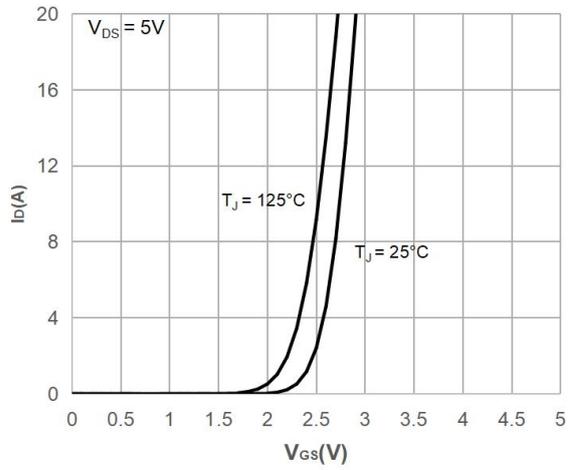


Figure 3: On-resistance vs. Drain Current

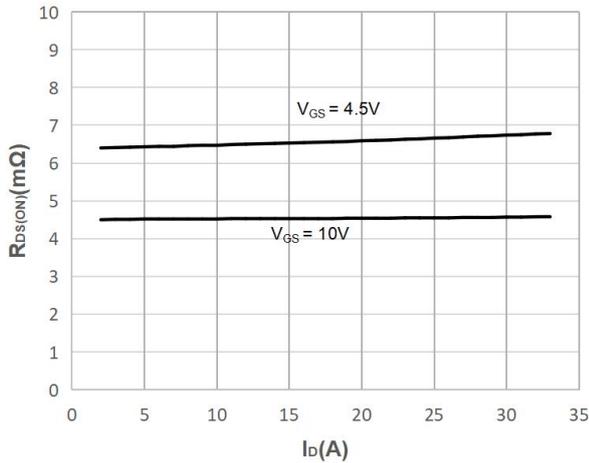


Figure 4: Body Diode Characteristics

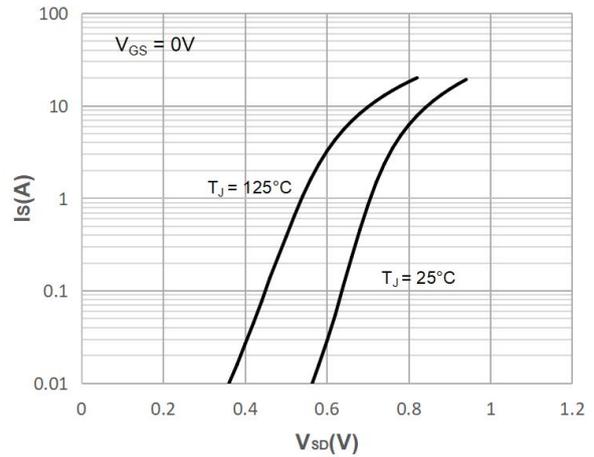


Figure 5: Gate Charge Characteristics

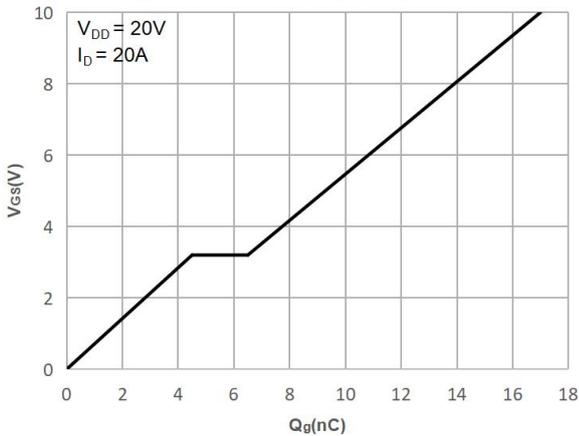
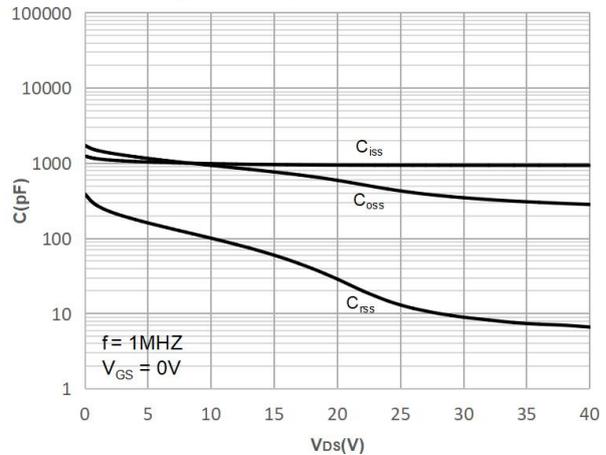


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

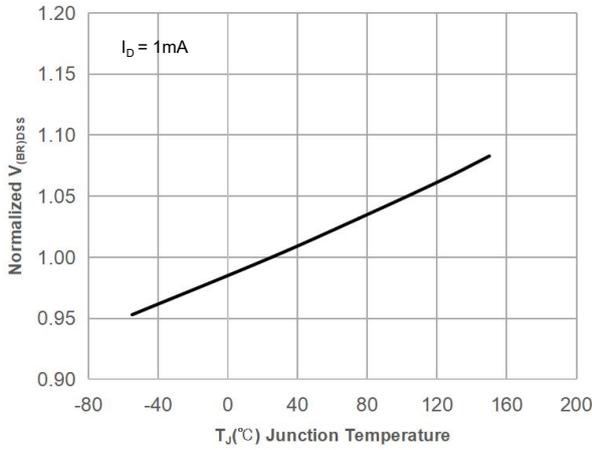


Figure 8: Normalized on Resistance vs. Junction Temperature

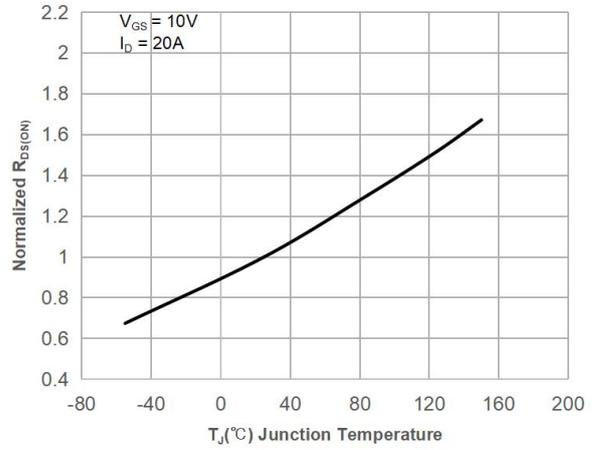


Figure 9: Maximum Safe Operating Area

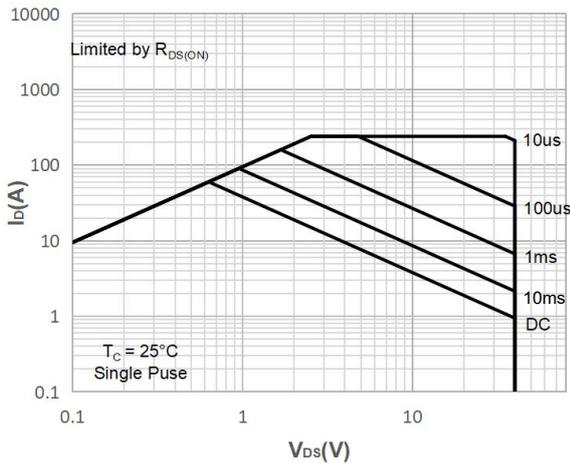


Figure 10: Maximum Continuous Driain Current vs. Case Temperature

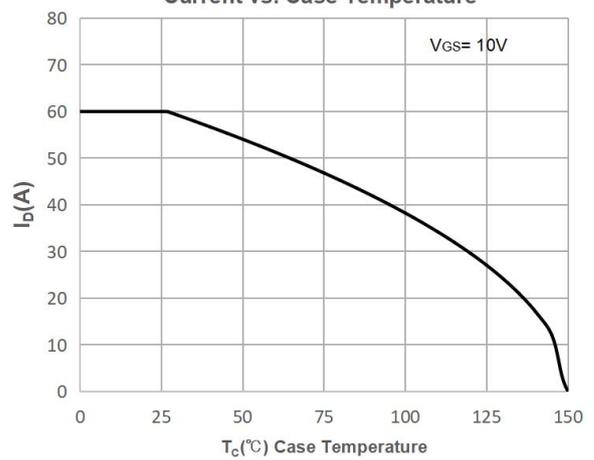


Figure 11: Normalized Maximum Transient Thermal Impedance

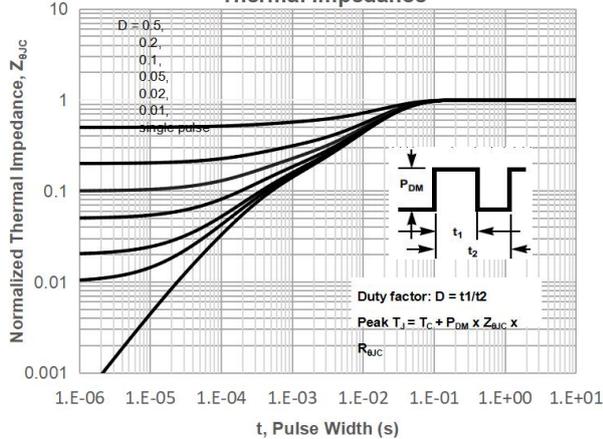
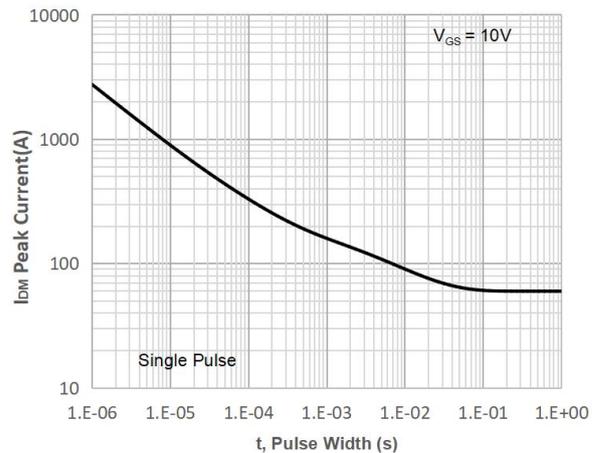
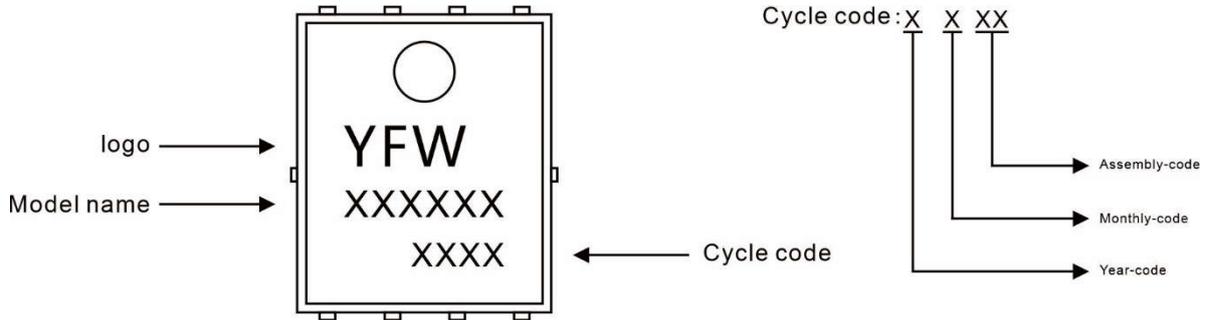


Figure 12: Peak Current Capacity



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW60N04NF	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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