

100V N+N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

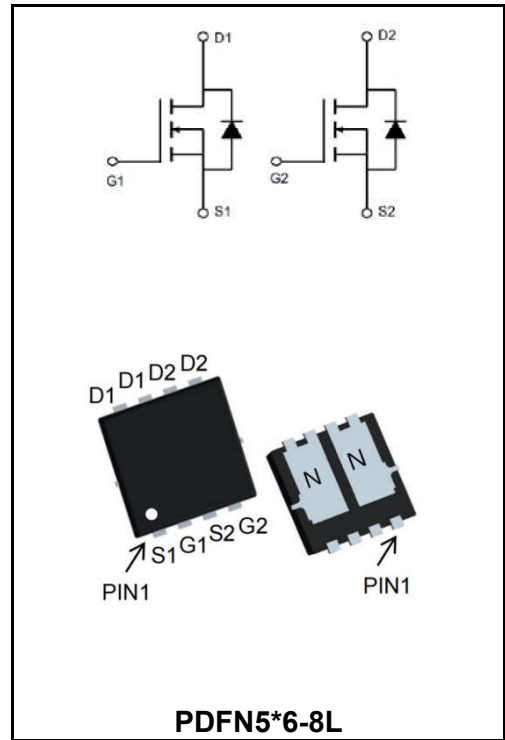
I_D	40A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 20mΩ (Type:14 mΩ)

Features

◆ YFW-SGT technology

Application

- ◆ Consumer electronic power supply
- ◆ Motor control
- ◆ Synchronous-rectification
- ◆ Isolated DC



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG40H10NF	PDFN5*6-8L	YFW 40H10NF XXXXX	5000PCS/Tape

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous drain current ¹⁾ , T _c =25 °C	I_D	40	A
Pulsed drain current ²⁾ , T _c =25 °C	I_{D, pulse}	120	A
Power dissipation ³⁾ , T _c =25 °C	P_D	71	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	57	mJ
Operating Junction Temperature Range	T_{STG} , T_J	-55 to +150	°C
Thermal Resistance ,Junction-Case	R_{θJC}	1.76	°C/W
Thermal resistance, junction-ambient ⁴⁾	R_{θJA}	25	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	B_{VDSS}	100	107	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	1.5	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(ON)}$	-	14	20	mΩ
	$V_{GS}=4.5V, I_D=7A$		-	18	25	
Gate-Source Leakage Current	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 100	nA
Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}	-	-	1	uA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100\text{ kHz}$	C_{iss}	-	1003.9	-	pF
Output Capacitance		C_{oss}	-	185.4	-	
Reverse Transfer Capacitance		C_{rss}	-	9.8	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DD}=50V$ $R_G=10\Omega$ $I_D=5A$	$t_{d(on)}$	-	16.6	-	ns
Rise Time		T_r	-	3.8	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	75.5	-	
Fall Time		t_f	-	46	-	
Total Gate Charge	$I_D=5A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	16.2	-	nC
Gate-Source Charge		Q_{gs}	-	2.8	-	
Gate-Drain Charge		Q_{gd}	-	4.1	-	
Gate plateau voltage		$V_{plateau}$	-	3	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	30	-	A
Pulsed Source Current		I_{SP}	-	90	-	A
Reverse Recovery Time	$I_S=1A, di/dt=100A/\mu s$	t_{rr}	49	-	-	nS
Reverse Recovery Charge		Q_{rr}	61.8	-	-	nC
Peak reverse recovery current		I_{rrm}	2.4	-	-	A

Note :

- 1、 Calculated continuous current based on maximum allowable junction temperature.
- 2、 Repetitive rating; pulse width limited by max. junction temperature.
- 3、 Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4、 The value of Rθja is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25 °C.
- 5、 V_{DD}=50 V, R_G=25 Ω, L=0.3 mH, starting Tj=25 °C.

Ratings and Characteristic Curves

Typical Characteristics

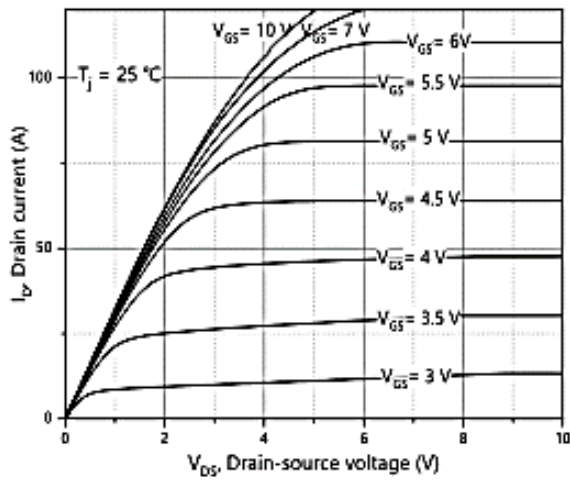


Figure 1, Typ. output characteristics

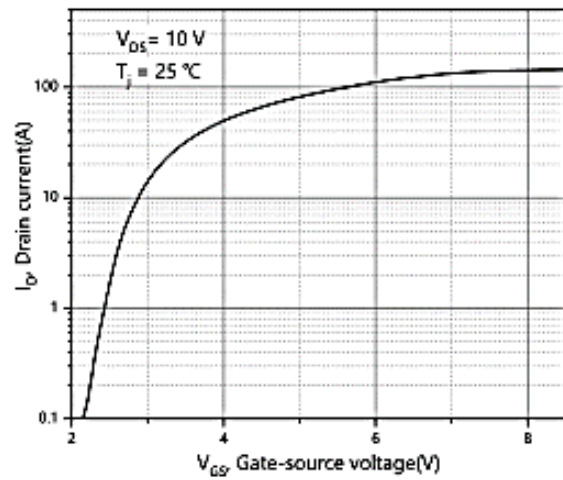


Figure 2, Typ. transfer characteristics

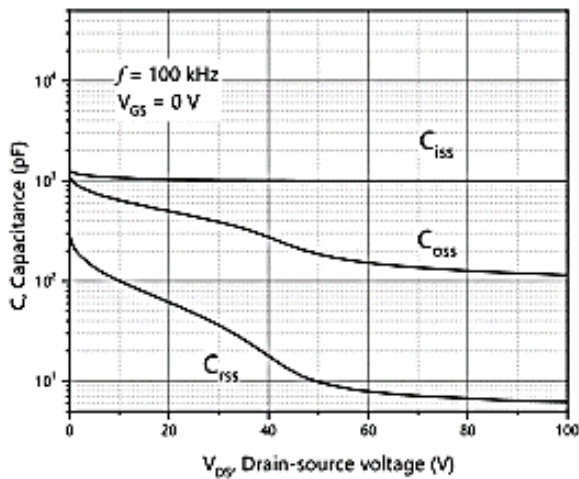


Figure 3, Typ. capacitances

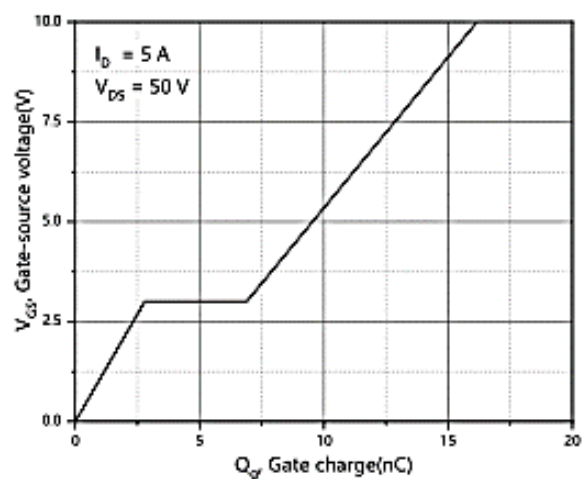


Figure 4, Typ. gate charge

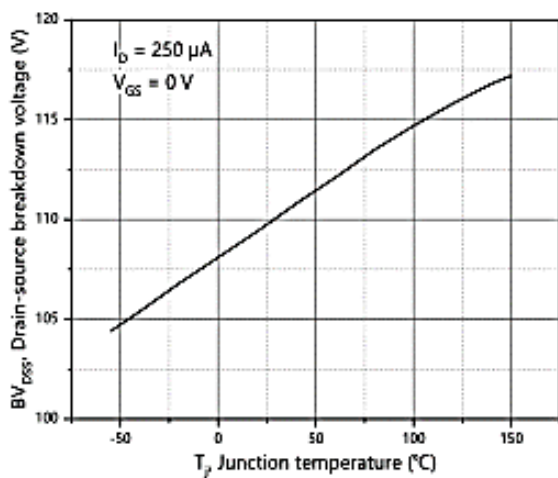


Figure 5, Drain-source breakdown voltage

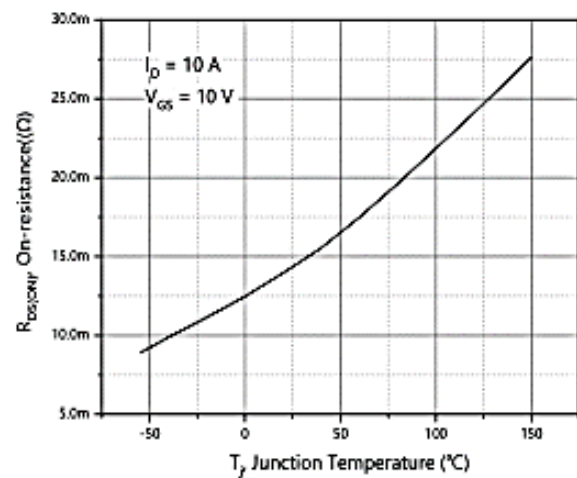


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

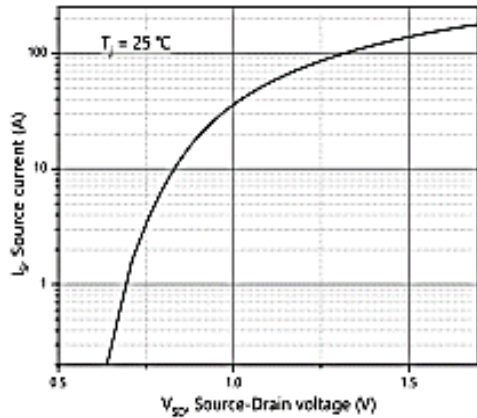


Figure 7, Forward characteristic of body diode

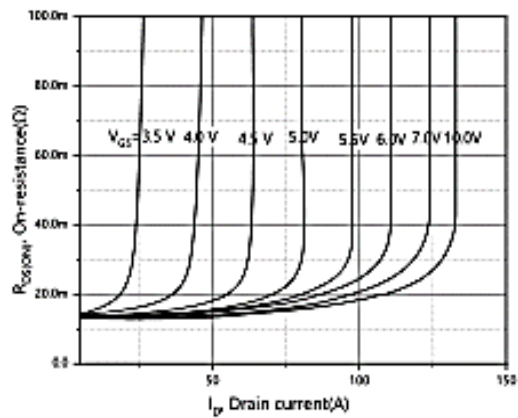


Figure 8, Drain-source on-state resistance

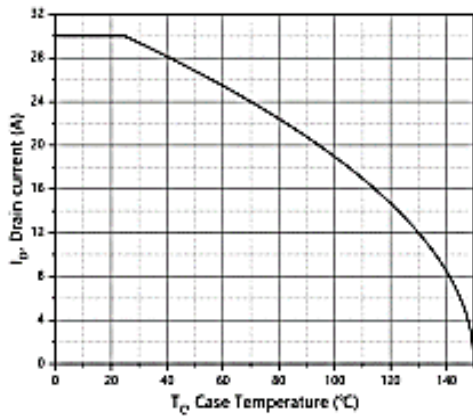


Figure 9, Drain current

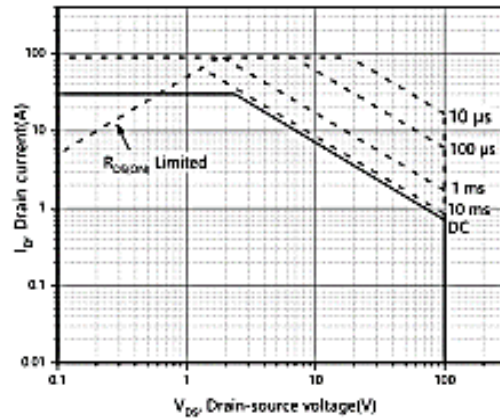


Figure 10, Safe operation area $T_C=25\text{ }^\circ\text{C}$

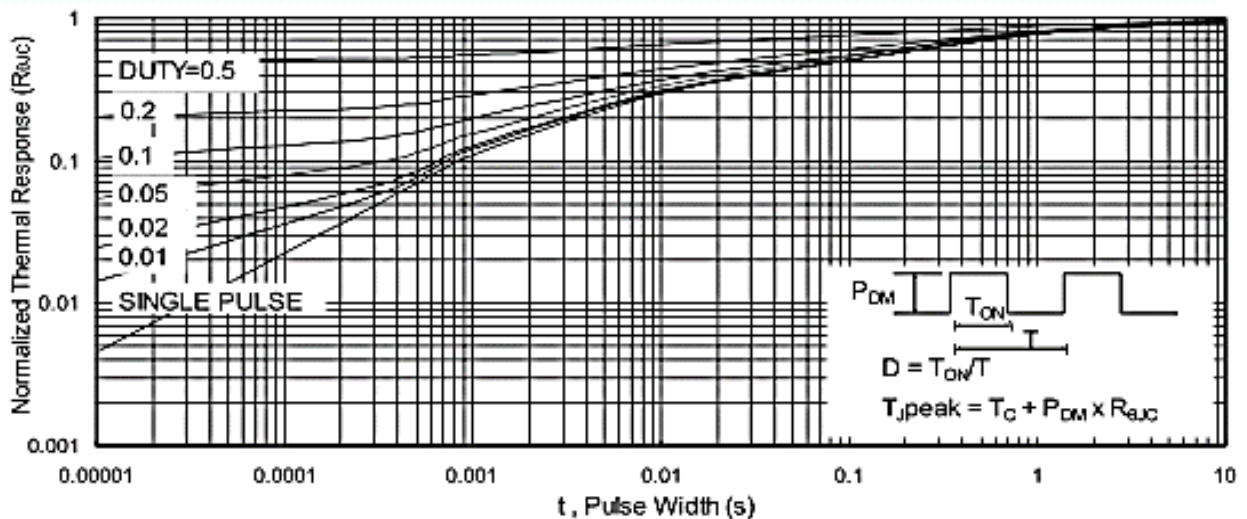
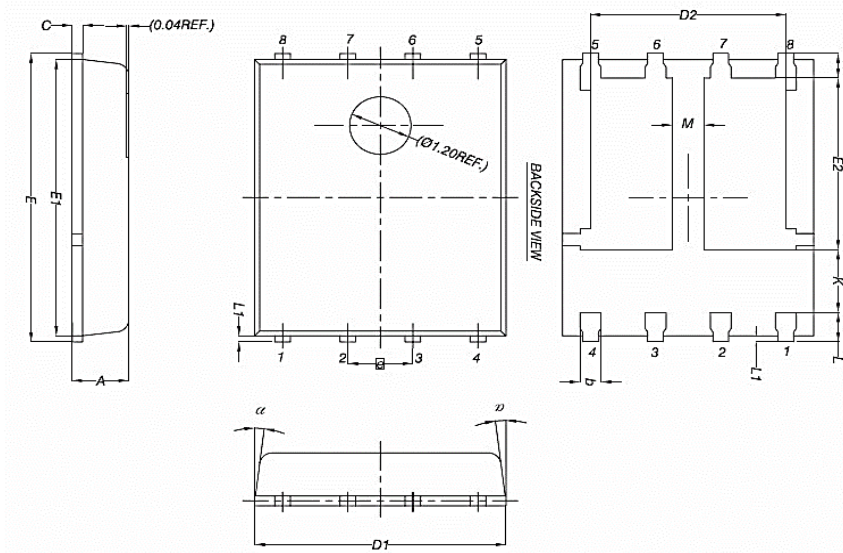


Figure 11, Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	3.30	3.45
E2	3.38	3.05	3.20
e	1.27BSC		
H	0.41	0.51	0.61
K	1.10	--	--
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
M	0.50	--	--
a	0°	--	12°