

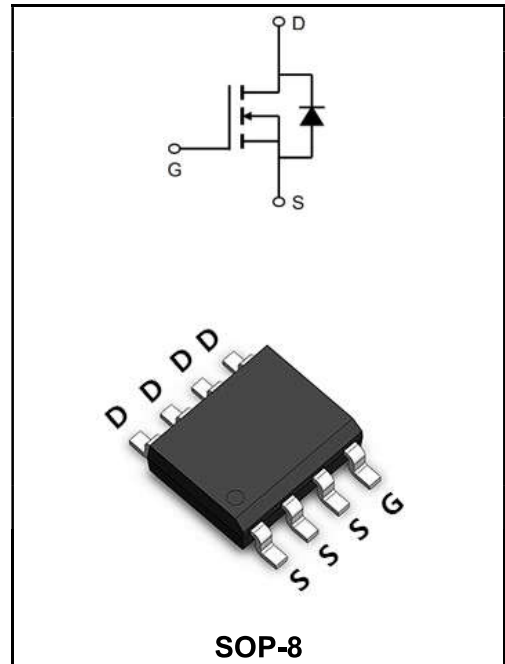
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	40A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 25mΩ (Type:19 mΩ)

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFW40N10S	SOP-8	YFW 40N10S XXXXX	3000PCS/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 Pulse Avalanche Energy ⁵⁾	E_{AS}	57	mJ
Operation and storage temperature	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}	62	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	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	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	-	19.0	25.0	mΩ
	$V_{GS}=4.5V, I_D=7A$		-	24.4	30.0	
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	μA
Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=100KHz$	C_{iss}	-	1003.9	-	pF
Output Capacitance		C_{oss}	-	185.4	-	
Reverse Transfer Capacitance		C_{rss}	-	9.8	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=10\Omega$ $I_D=5A$	$t_{d(on)}$	-	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、 VDD=50 V, RG=25 Ω, L=0.3 mH, starting Tj=25 °C.

Typical Characteristics

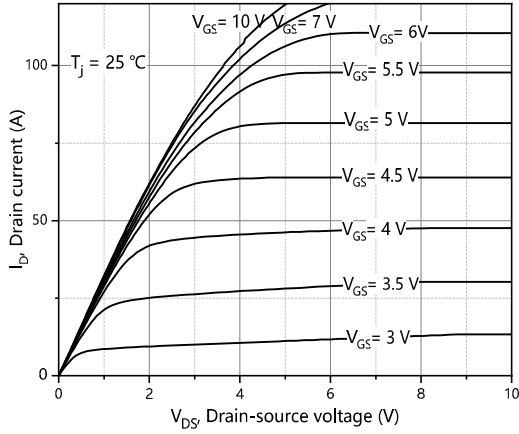


Figure 1, Typ. output characteristics

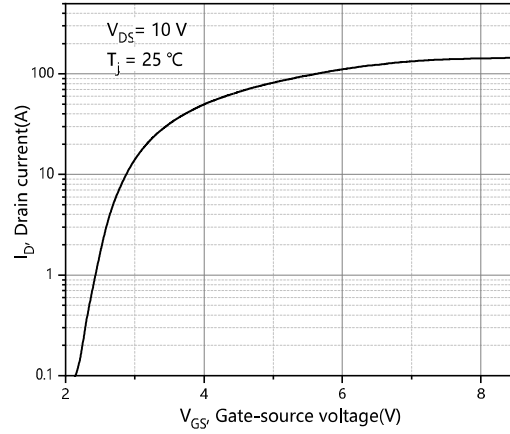


Figure 2, Typ. transfer characteristics

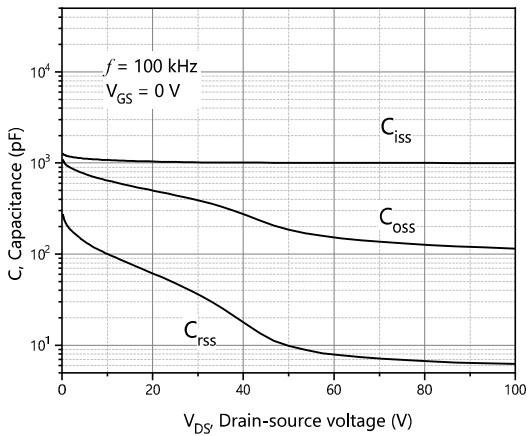


Figure 3, Typ. capacitances

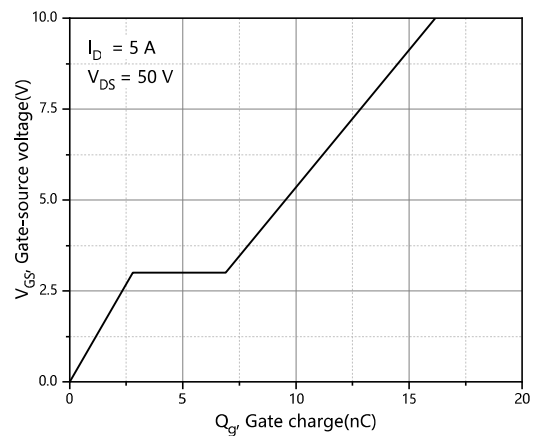


Figure 4, Typ. gate charge

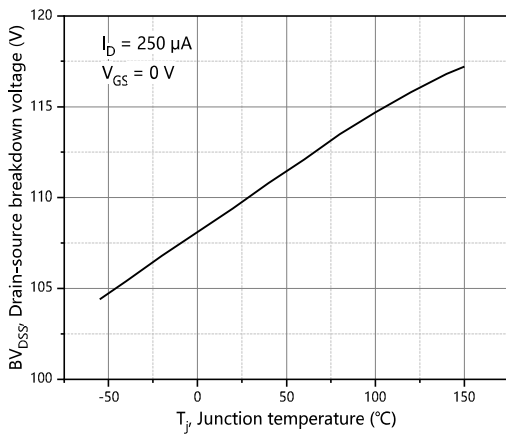


Figure 5, Drain-source breakdown voltage

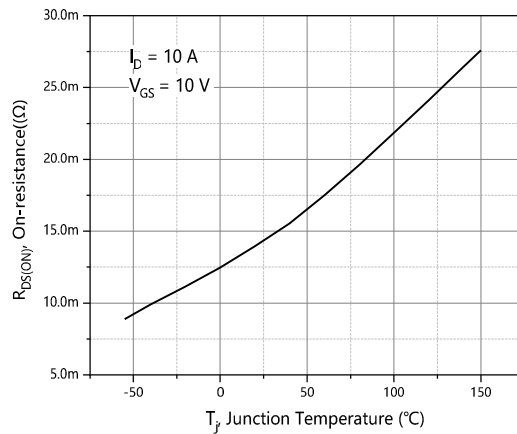


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

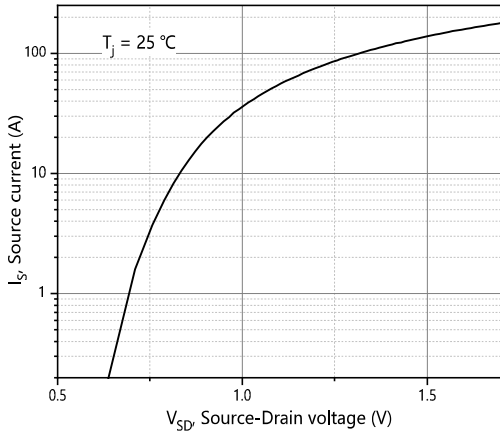


Figure 7, Forward characteristic of body diode

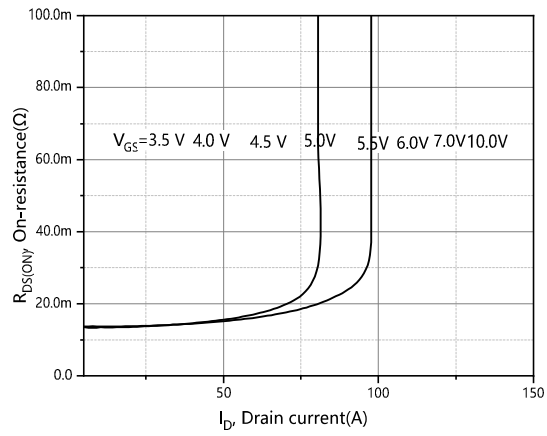


Figure 8, Drain-source on-state resistance

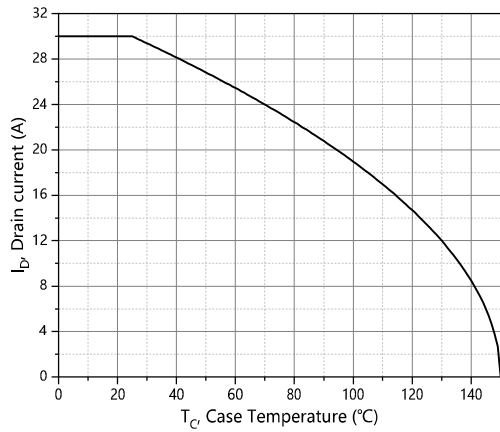


Figure 9, Drain current

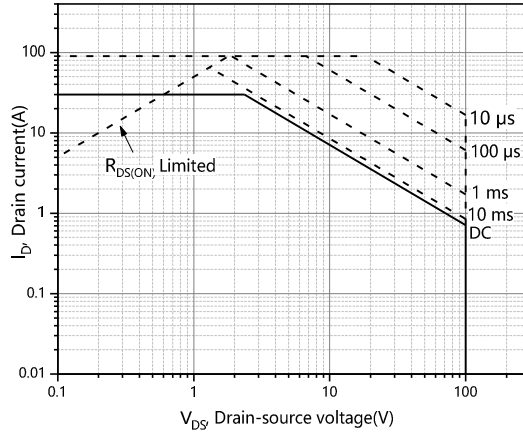


Figure 10, Safe operation area $T_C=25\text{ °C}$

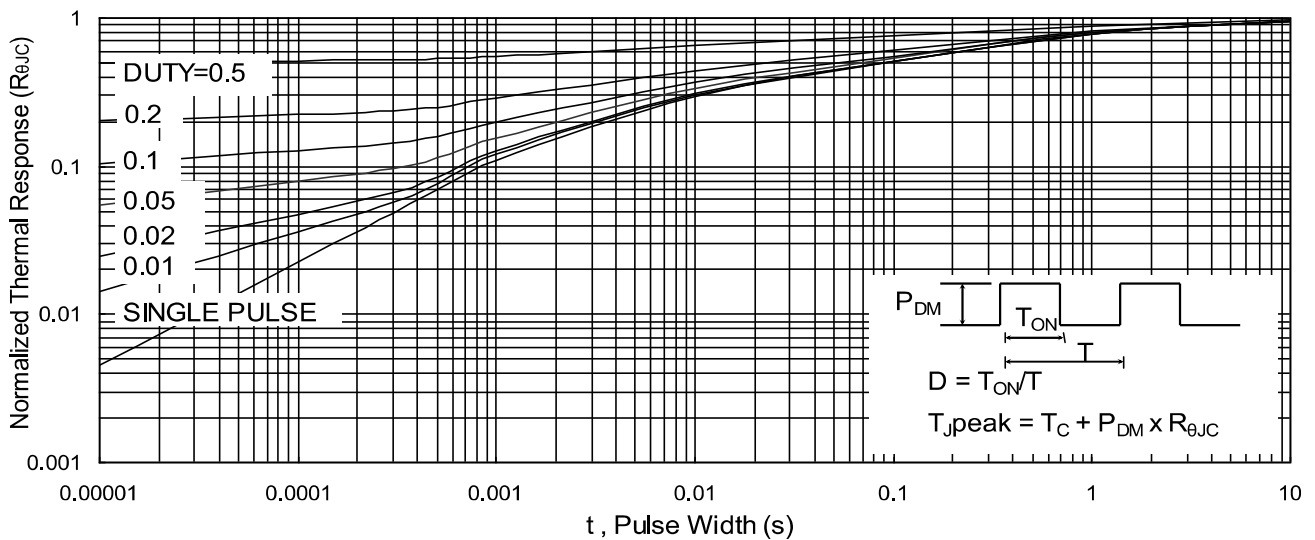
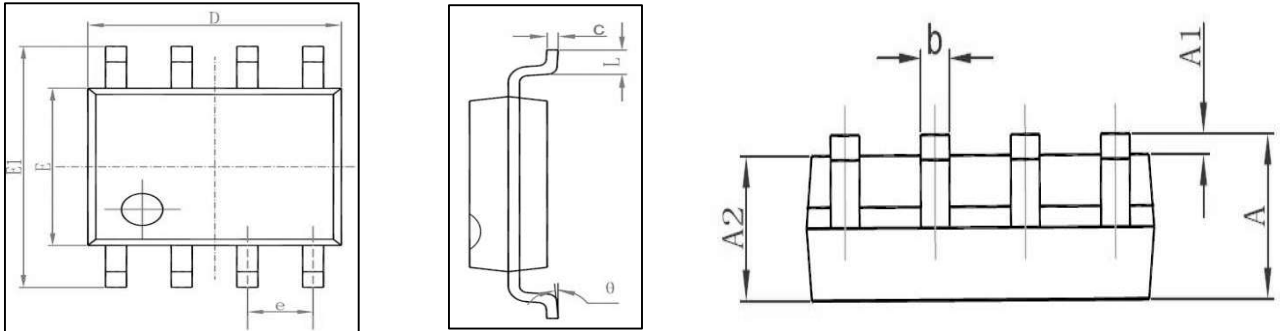
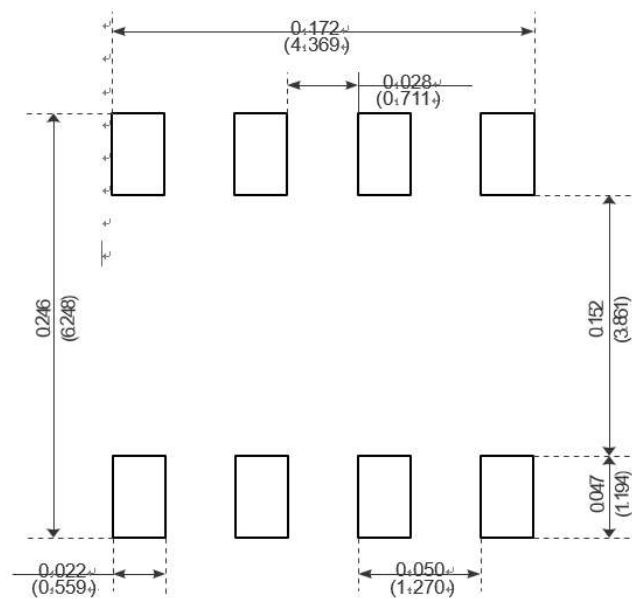


Fig11. Normalized Maximum Transient Thermal Impedance

SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads