

100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

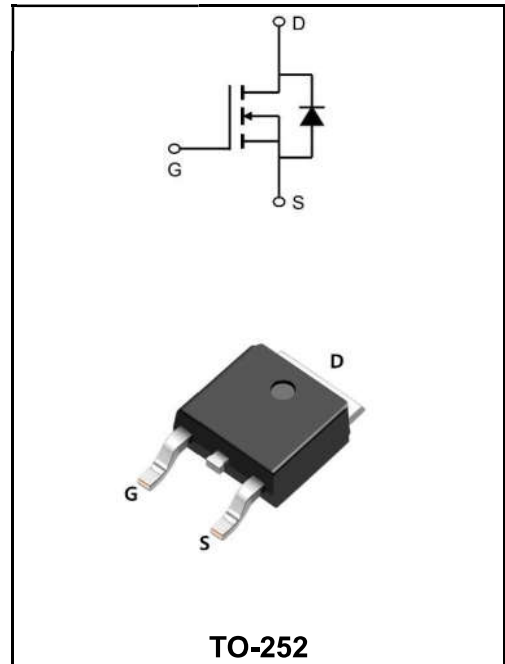
I_D	12A
V_{DSS}	100V
R_{DS(on)-typ(@V_{GS}=10V)}	< 125mΩ (Type:105 mΩ)

Features

◆ YFW-SGT technology

Application

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



Product Specification Classification

Part Number	Package	Marking	Pack
YFWG12N10AD	TO-252	YFW 12N10AD XXXXX	2500PCS/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	12	A
Pulsed drain current ²⁾ , T _c =25 °C	I_{D, pulse}	24	A
Power dissipation ³⁾ , T _c =25 °C	P_D	17	W
Single Pulse Avalanche Energy ⁵⁾	E_{AS}	1.2	mJ
Operation and storage temperature	T_{STG}, T_J	-55 to +150	°C
Thermal Resistance, Junction-case	R_{θJC}	7.4	°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	111	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.2	2.0	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=5A$	$R_{DS(on)}$	-	105	125	mΩ
	$V_{GS}=4.5V, I_D=3A$		-	115	145	
Gate-Source Leakage Current	$V_{GS}=20V$	I_{GSS}	-	-	100	nA
	$V_{GS}=-20V$		-	-	-100	
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}	-	206.1	-	pF
Output Capacitance		C_{oss}	-	28.9	-	
Reverse Transfer Capacitance		C_{rss}	-	1.4	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2\Omega$ $I_D=5A$	$t_{d(on)}$	-	14.7	-	ns
Rise Time		T_r	-	3.5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	20.9	-	
Fall Time		t_f	-	2.7	-	
Total Gate Charge	$I_D=5A$ $V_{DS}=50V$ $V_{GS}=10V$	Q_g	-	4.3	-	nC
Gate-Source Charge		Q_{gs}	-	1.5	-	
Gate-Drain Charge		Q_{gd}	-	1.1	-	
Gate plateau voltage		$V_{plateau}$	-	5.0	-	
Diode forward current	$V_{GS}<V_{th}$	I_S	-	-	7	A
Pulsed Source Current		I_{SP}	-	-	21	A
Diode Forward Voltage	$I_S=7A, V_{GS}=0V$	V_{SD}	-	-	1.0	V
Reverse Recovery Time	$I_S=5A, di/dt=100A/\mu s$	t_{rr}	-	32.1	-	ns
Reverse Recovery Charge		Q_{rr}	-	39.4	-	nC
Peak reverse recovery current		I_{rrm}	-	2.1	-	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=50 Ω, L=0.3 mH, starting Tj=25 °C.

Ratings and Characteristic Curves

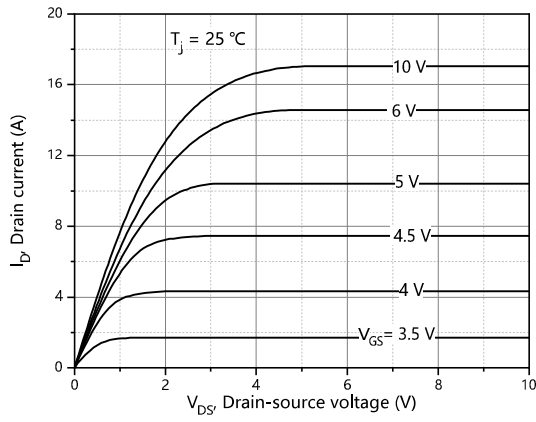


Figure 1, Typ. output characteristics

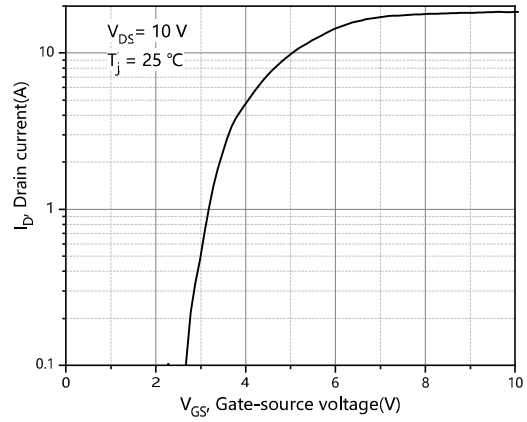


Figure 2, Typ. transfer characteristics

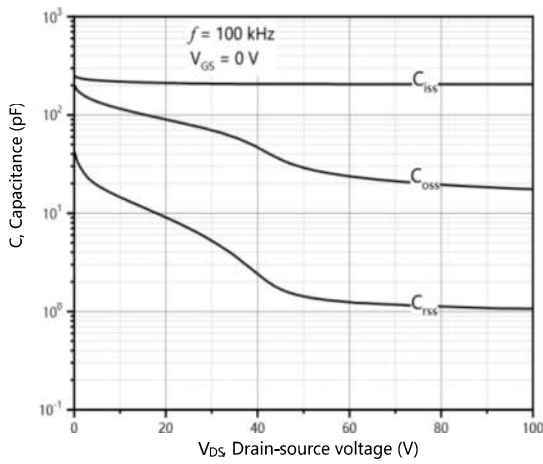


Figure 3, Typ. capacitances

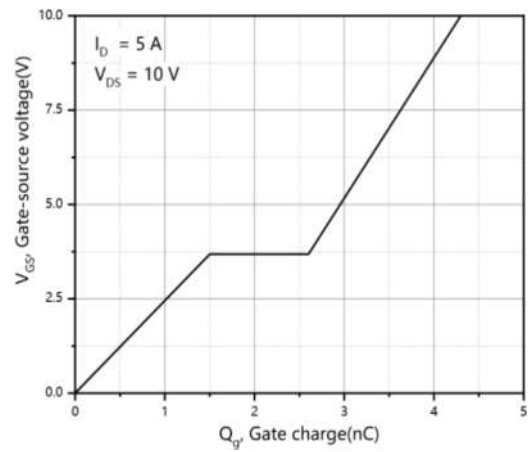


Figure 4, Typ. gate charge

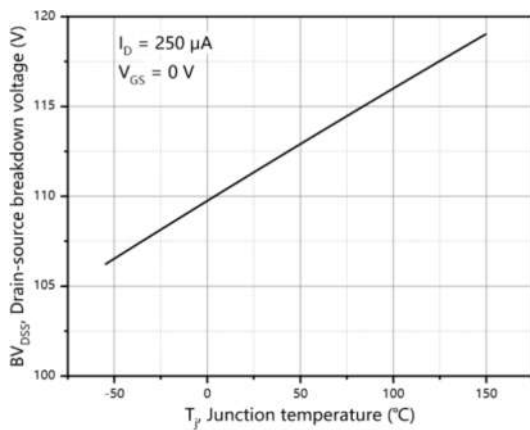


Figure 5, Drain-source breakdown voltage

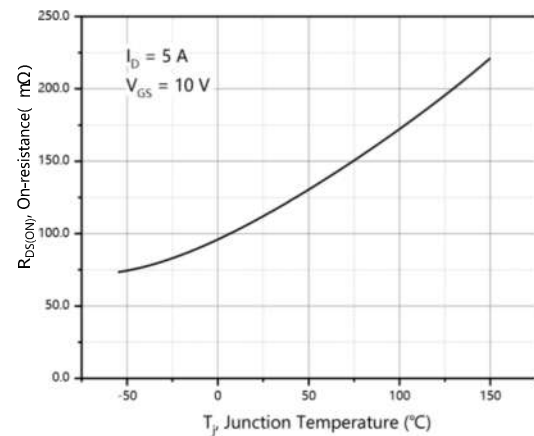


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

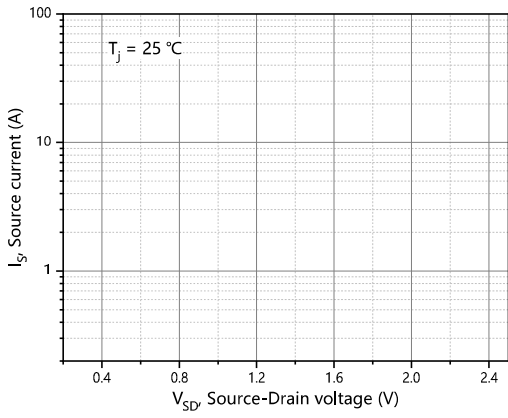


Figure 7, Forward characteristic of body diode

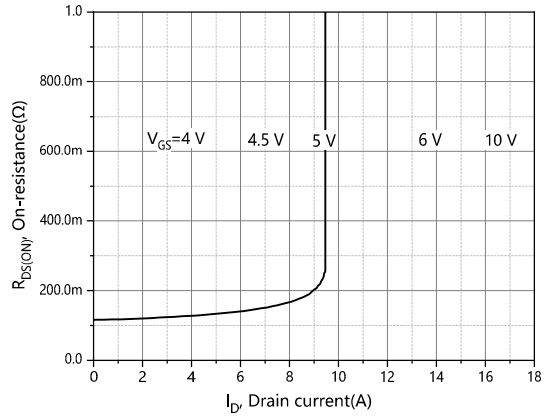


Figure 8, Drain-source on-state resistance

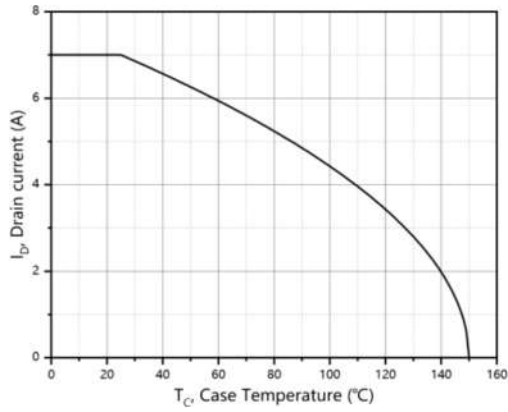


Figure 9, Drain current

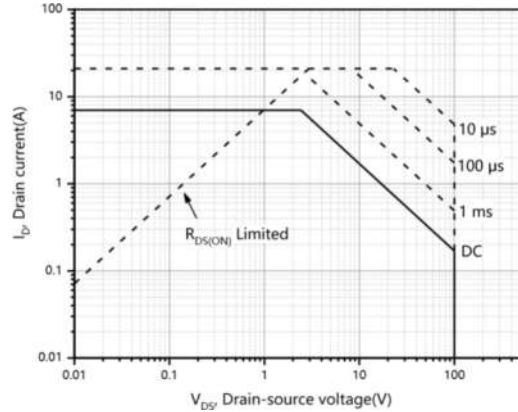


Figure 10, Safe operation area $T_C=25\text{ }^\circ\text{C}$

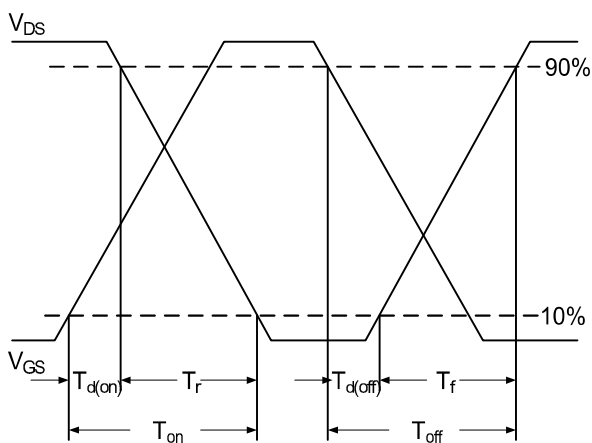


Fig.11 Switching Time Waveform

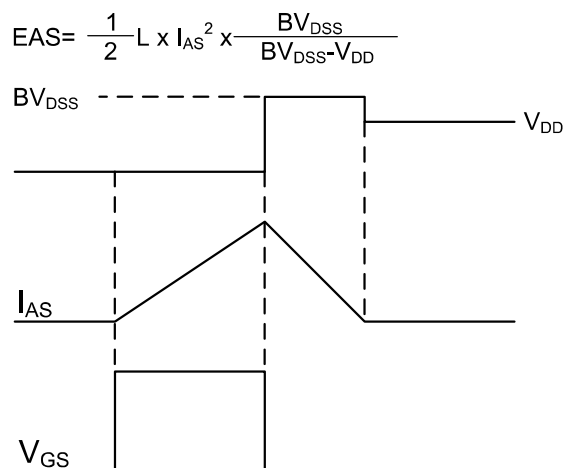


Fig.12 Unclamped Inductive Switching Waveform

Package Outline Dimensions Millimeters

TO-252

Dim.	Min.	Typ.	Max.
A	2.10	-	2.50
A2	0	-	0.10
B	0.66	-	0.86
B2	5.18	-	5.48
C	0.40	-	0.60
C2	0.44	-	0.58
D	5.90	-	6.30
D1	5.30REF		
E	6.40	-	6.80
E1	4.63	-	-
G	4.47	-	4.67
H	9.50	-	10.70
L	1.09	-	1.21
L2	1.35	-	1.65
V1	-	7°	-
V2	0°	-	6°
All Dimensions in millimeter			

