

**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

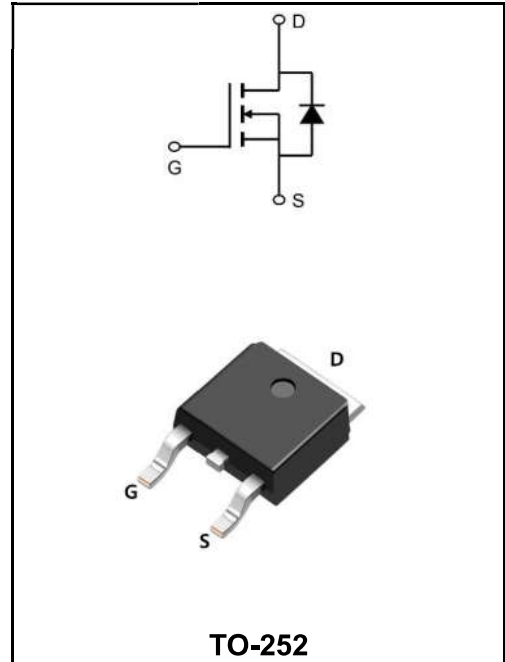
<b>I<sub>D</sub></b>	60A
<b>V<sub>DSS</sub></b>	100V
<b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b>	< 10mΩ ( <b>Type:8 mΩ</b> )

**Features**

- ◆ Low RDS(on) & FOM
- ◆ Extremely low switching loss
- ◆ Excellent stability and uniformity or Invertors
- ◆ **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
YFWG60N10AD	TO-252	YFW 60N10AD XXXXX	2500PCS/Tape

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbols	Value	Units
Drain-Source Voltage	<b>V<sub>DS</sub></b>	100	<b>V</b>
Gate - Source Voltage	<b>V<sub>GS</sub></b>	± 20	<b>V</b>
Continuous drain current <sup>1)</sup> , T <sub>C</sub> =25 °C	<b>I<sub>D</sub></b>	60	<b>A</b>
Pulsed drain current <sup>2)</sup> , T <sub>C</sub> =25 °C	<b>I<sub>D, pulse</sub></b>	180	<b>A</b>
Power dissipation <sup>3)</sup> , T <sub>C</sub> =25 °C	<b>P<sub>D</sub></b>	125	<b>W</b>
Single Pulse Avalanche Energy <sup>5)</sup>	<b>E<sub>AS</sub></b>	100	<b>mJ</b>
Operation and storage temperature	<b>T<sub>STG</sub>, T<sub>J</sub></b>	-55 to +150	<b>°C</b>
Thermal Resistance, Junction-case	<b>R<sub>θJC</sub></b>	1	<b>°C/W</b>
Thermal Resistance, Junction-ambient <sup>4)</sup>	<b>R<sub>θJA</sub></b>	62	<b>°C/W</b>

**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	-	-	V
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.0	-	2.5	V
Drain-source on-state resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	-	8	10	mΩ
	$V_{GS}=4.5V, I_D=10A$		-	10	12	
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	$V_{GS}=0V$ $V_{DS}=50V$ $f=1MHz$	$C_{iss}$	-	2604	-	pF
Output Capacitance		$C_{oss}$	-	361.2	-	
Reverse Transfer Capacitance		$C_{rss}$	-	6.5	-	
Turn-on delay time	$V_{GS}=10V$ $V_{DS}=50V$ $R_G=2.2\Omega$ $I_D=25A$	$t_{d(on)}$	-	20.6	-	ns
Rise Time		$T_r$	-	5	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	51.8	-	
Fall Time		$t_f$	-	9	-	
Total Gate Charge	$I_D=25A$ $V_{DS}=50V$ $V_{GS}=10V$	$Q_g$	-	49.9	-	nC
Gate-Source Charge		$Q_{gs}$	-	6.5	-	
Gate-Drain Charge		$Q_{gd}$	-	12.4	-	
Gate plateau voltage		$V_{plateau}$	-	3.4	-	
Diode forward current	$V_{GS}<V_{th}$	$I_S$	-	-	60	A
Pulsed Source Current		$I_{SP}$	-	-	180	
Diode Forward Voltage	$I_S=12A, V_{GS}=0V$	$V_{SD}$	-	-	1.3	V
Reverse Recovery Time	$I_S=12A, dI/dt=100A/\mu s$	$t_{rr}$	-	60.4	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	106.1	-	nC
Peak reverse recovery current		$I_{rrm}$	-	3	-	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.

**Ratings and Characteristic Curves**

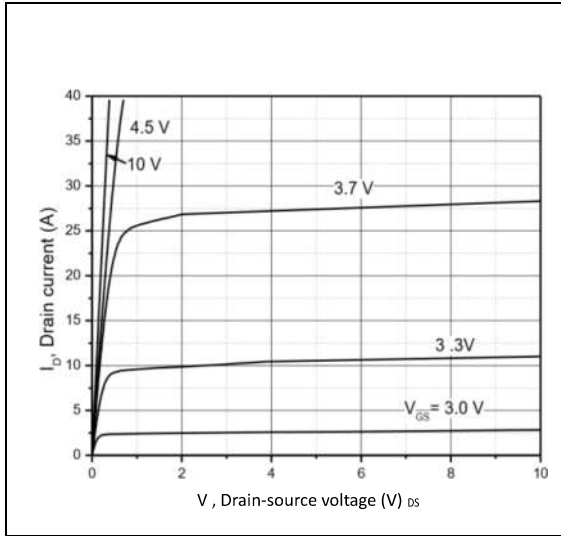


Figure 1, Typ. output characteristics

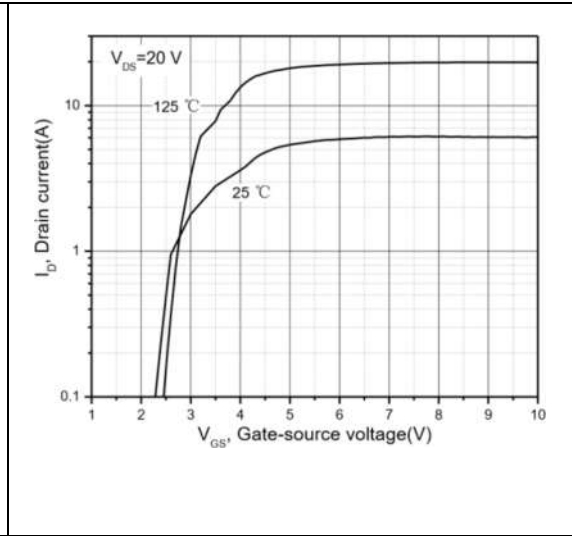


Figure 2, Typ. transfer characteristics

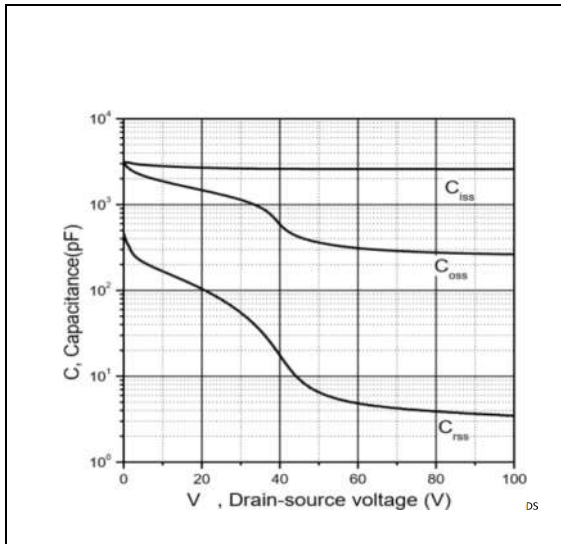


Figure 3, Typ. capacitances

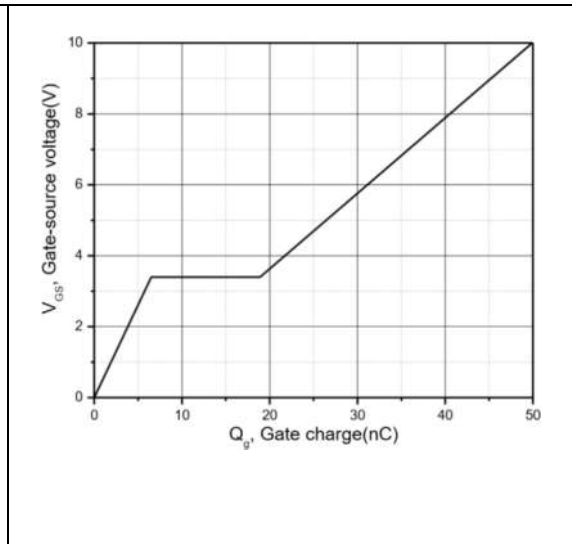


Figure 4, Typ. gate charge

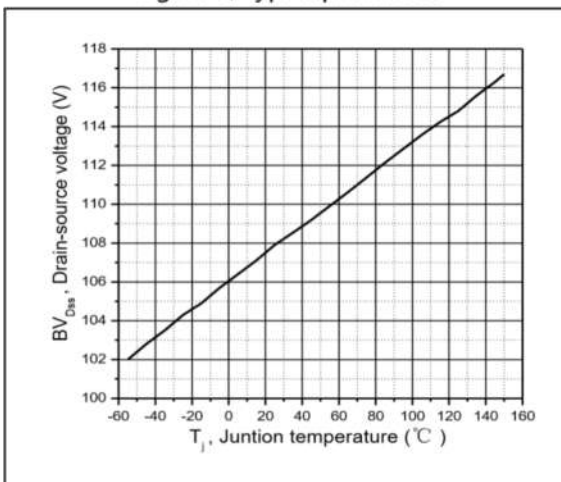


Figure 5, Drain-source breakdown voltage

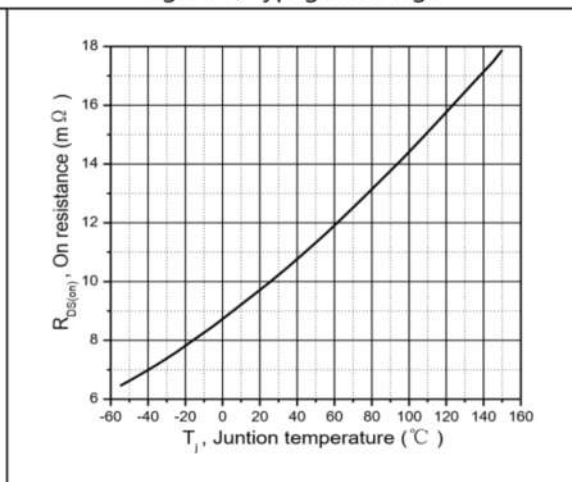


Figure 6, Drain-source on-state resistance

Ratings and Characteristic Curves

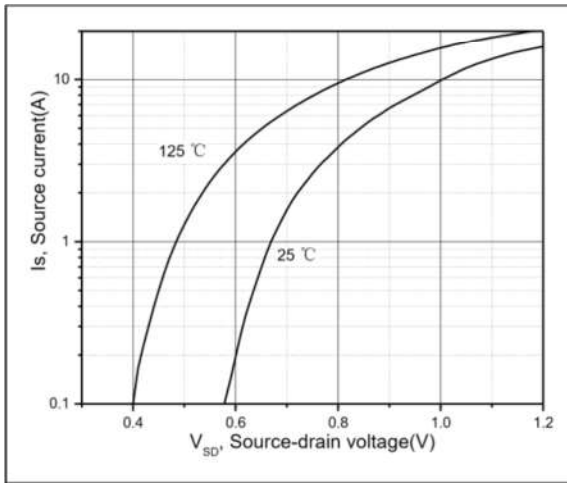


Figure 7, Forward characteristic of body diode

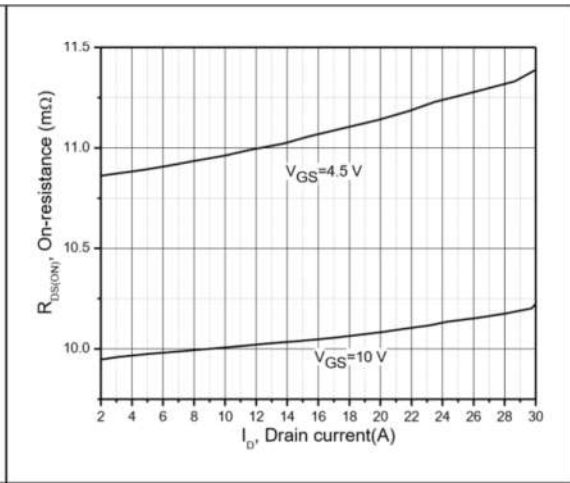


Figure 8, Drain-source on-state resistance

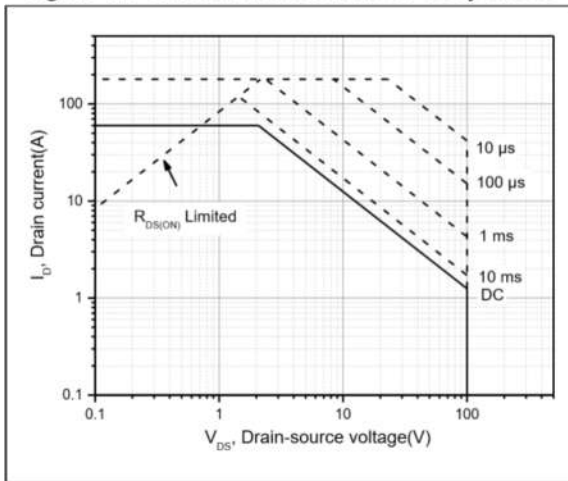


Figure 9, Safe operation area  $T_C=25\text{ }^\circ\text{C}$

Test circuits and waveforms

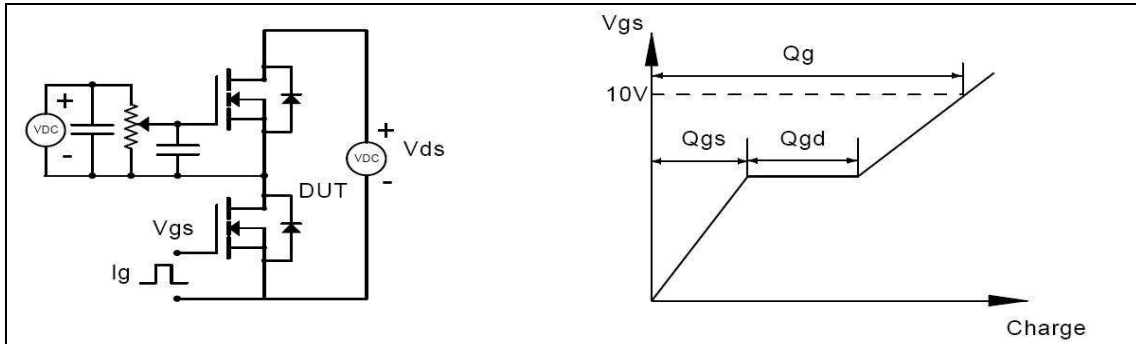


Figure 1, Gate charge test circuit & waveform

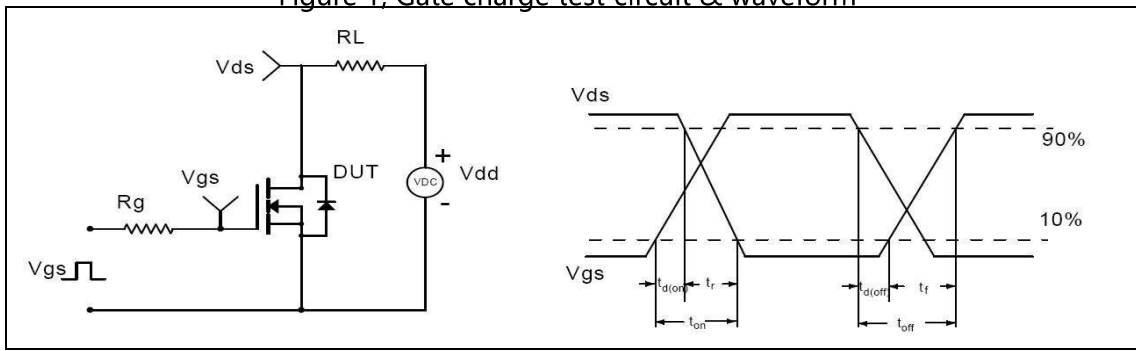


Figure 2, Switching time test circuit & waveforms

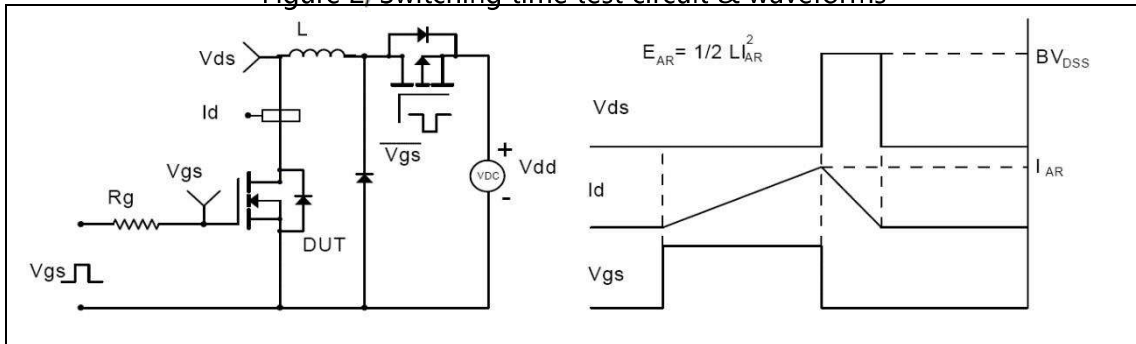


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

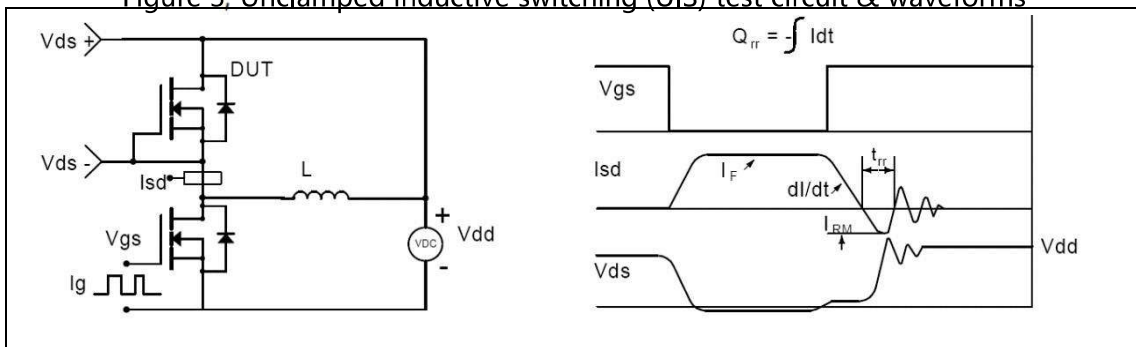


Figure 4, Diode reverse recovery test circuit & waveforms

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			

