

60V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	90A
V_{DSS}	60V
R_{DS(on)-typ(@V_{GS}=10V)}	< 7.0mΩ (Type:5.8 mΩ)

Application

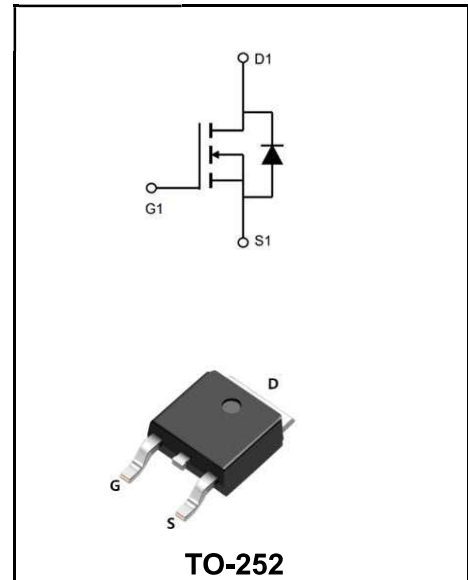
- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

Mechanical Data

- ◆ Case: Molded plastic
- ◆ Mounting Position: Any
- ◆ Molded Plastic: UL Flammability Classification Rating 94V-0
- ◆ Solder bath temperature 275°C maximum, 10s per JESD22-106

Product Specification Classification

Part Number	Package	Marking	Pack
YFW90N06AD	TO-252	YFW 90N06AD	2500PCS/Tape



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ⁽¹⁾	I_D	90	A
Pulsed Drain Current ⁽²⁾	I_{DM}	320	A
Diode forward current	I_S	37	A
Pulsed source current	I_{SP}	210	A
Power dissipation	P_D	108	W
Single pulsed avalanche energy ³⁾	E_{AS}	205.4	mJ
Operation and storage temperature	$T_{stg} T_J$	-55 to +150	°C
Thermal resistance, junction-case	$R_{\theta JC}$	1.4	°C/W
Thermal Resistance Junction-Ambient ⁽⁴⁾	$R_{\theta JA}$	62.5	°C/W

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	$V_{(BR)DSS}$	60	64	-	V
Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	-	-	1.0	μA
Gate to Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	3.0	4.0	V
Static Drain-Source on-Resistance note	$V_{GS}=10V, I_D=30A$	$R_{DS(ON)}$	-	5.8	7.0	m Ω
Input Capacitance	$V_{DS}=30V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	4136	-	PF
Output Capacitance		C_{oss}	-	286	-	PF
Reverse Transfer Capacitance		C_{rss}	-	257	-	PF
Total Gate Charge	$V_{DS}=30V$ $I_D=30A$ $V_{GS}=10V$	Q_g	-	90	-	nC
Gate-Source Charge		Q_{gs}	-	9	-	nC
Gate-Drain("Miller") Charge		Q_{gd}	-	18	-	nC
Turn-on delay time	$V_{DS}=30V$ $I_D=30A$ $V_{GS}=10V$ $R_G=1.8\Omega$	$t_{d(on)}$	-	9	-	nS
Turn-on Rise Time		T_r	-	7	-	nS
Turn-Off Delay Time		$t_{d(OFF)}$	-	40	-	nS
Turn-Off Fall Time		t_f	-	15	-	nS
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	90	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	320	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	$I_F=30A, dI/dt=100A/\mu s$	T_{rr}	-	33	-	nS
Body Diode Reverse Recovery Charge		Q_{rr}	-	46	-	nC

Note:

- 1、The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、The test cond $\cong 300\mu s$ duty cycle $\cong 2\%$, duty cycle ition is $T_J=25^\circ C, V_{DD}=35V, V_G=10V, R_G=25\Omega, L=0.5mH, I_{AS}=21A$
- 4、The power dissipation is limited by $175^\circ C$ junction temperature
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

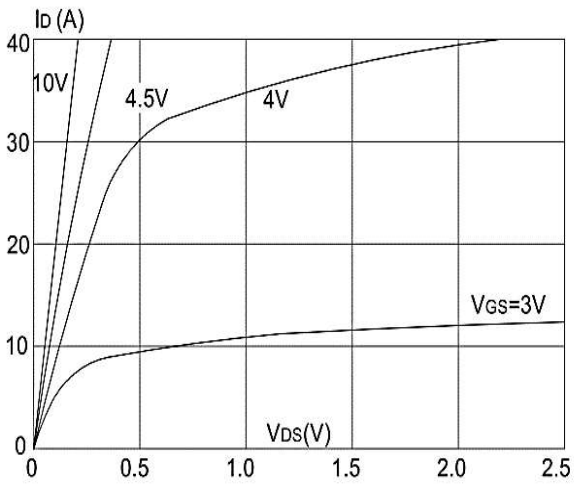


Figure 1: Output Characteristics

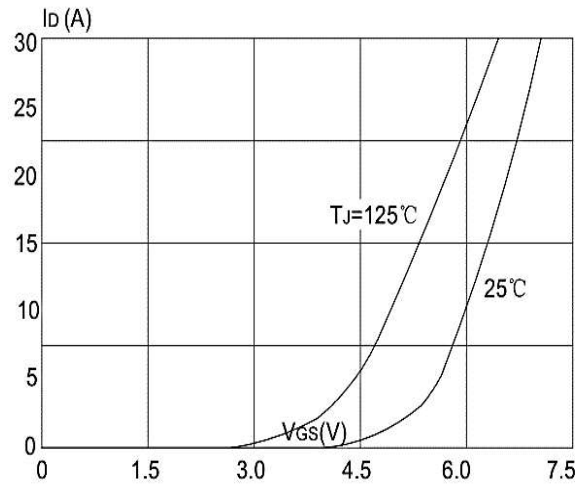


Figure 2: Typical Transfer Characteristics

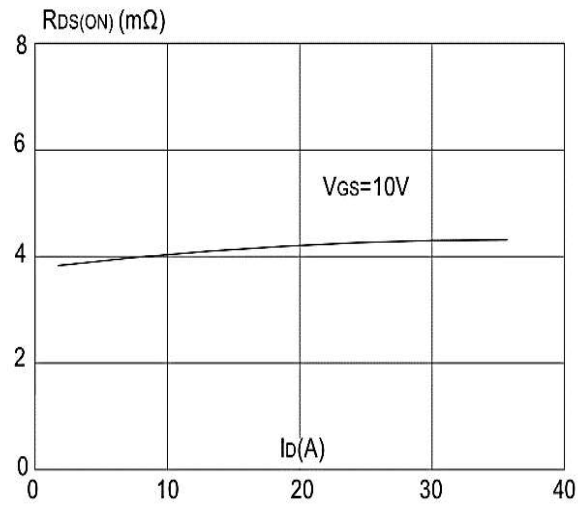


Figure 3: On-resistance vs. Drain Current

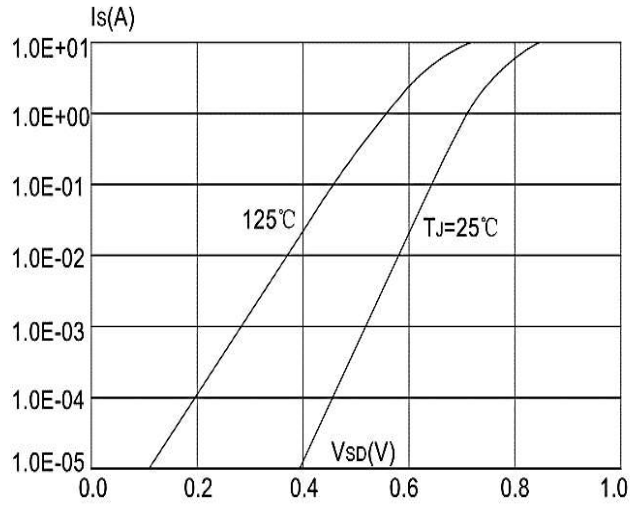


Figure 4: Body Diode Characteristics

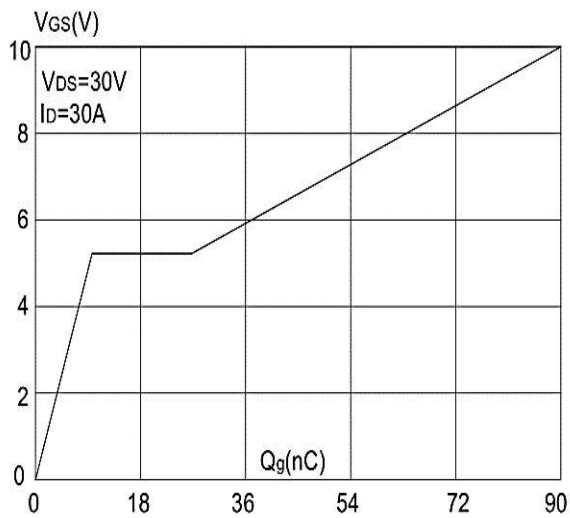


Figure 5: Gate Charge Characteristics

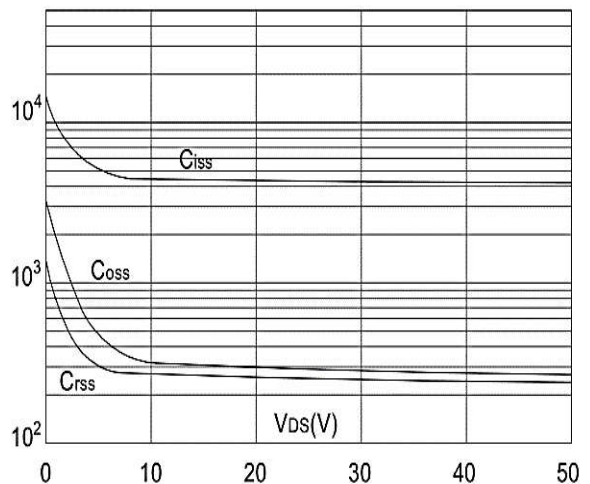


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

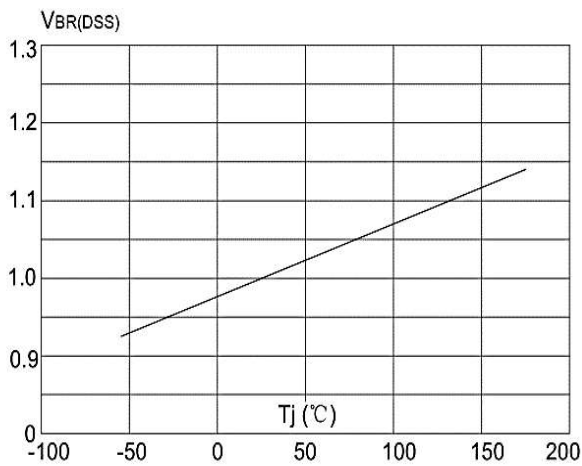


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

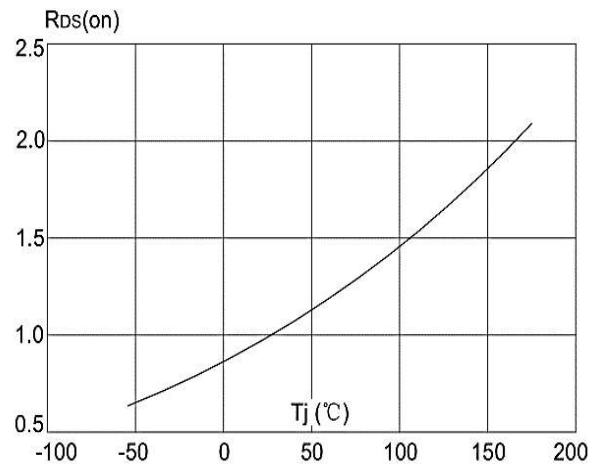


Figure 8: Normalized on Resistance vs. Junction Temperature

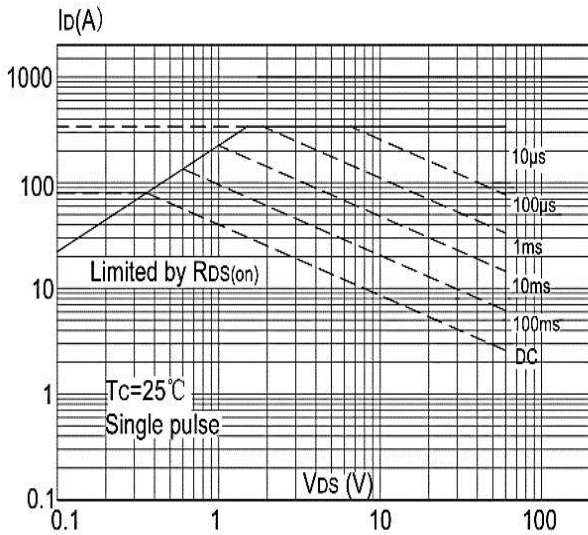


Figure 9: Maximum Safe Operating Area

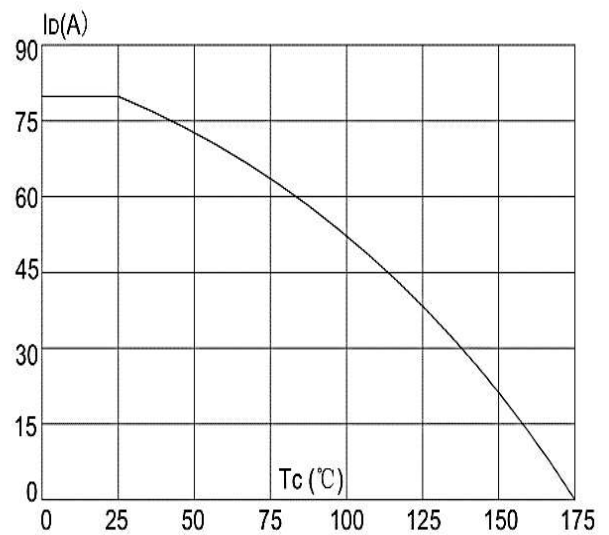


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

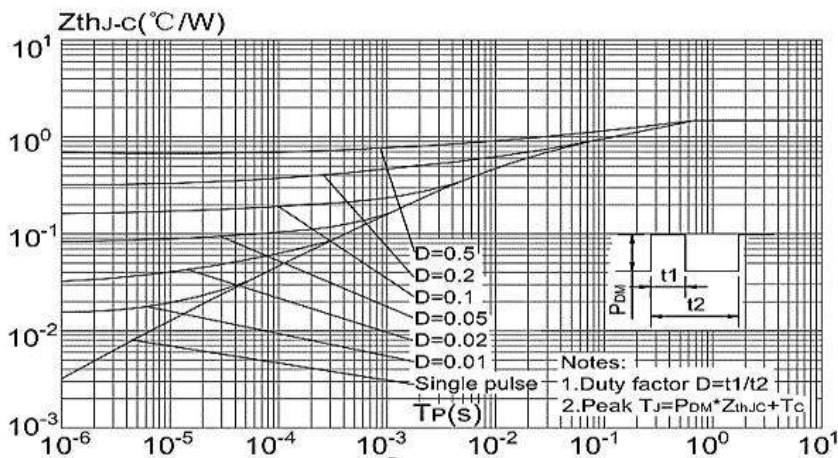


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

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				