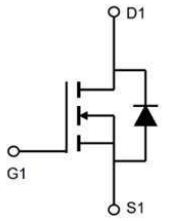
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	50A
V_{DSS}	100V
R_{DSON}-typ(@V_{GS}=10V)	<28mΩ **(Type:24mΩ)**



TO-252

Features

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test
- LeadfreeincomplywithEURoHS2011/65/EUdirectives

Mechanical Data

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Solder bath temperature275℃maximum,10s per JESD22-106

Product Specification Classification

Part Number	Package	Marking	Pack
YFW50N10AD	TO-252	YFW 50N10AD XXXXX	2500PCS/Tape

Maximum Ratings At Tc=25°C Unless Otherwise Specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current Continuous	I_D	50	A
Drain Current Continuous (Tc=100°C)	I_D	21	A
Pulsed Drain Current	I_{DM}	70	A
Maximum Power Dissipation	P_D	85	W
Derating factor		0.57	W/°C
Single Pulse Avalanche Energy (Note5)	E_{AS}	256	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +175	°C
Thermal Resistance, Junction-to-Case (Note 2)	$R_{\theta JC}$	1.8	°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} = 0 V,I_D = 250 μA	BV_{DSS}	100	-	-	V
Zero Gate Voltage Drain Current	V_{DS} = 100 V, V_{GS} = 0 V	I_{DSS}	-	-	1	uA
Gate-Body Leakage Current	V_{GS} = ± 20 V, VDS = 0 V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	1	-	3	V
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D = 20 A	$R_{DS(on)}$	-	24	28	mΩ
Drain-Source On-State Resistance	V_{GS} = 4.5 V, I_D = 10 A	$R_{DS(on)}$		28	30	mΩ
Forward Transconductance	V_{DS} = 5 V, I_D = 10A	gfs	-	15	-	S
Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f =1MHz	C_{iss}	-	2000	-	pF
Output Capacitance		C_{oss}	-	300	-	
Reverse Transfer Capacitance		C_{rss}	-	250	-	
Turn-on Delay Time	V_{DD}=50V,R_L=5Ω V_{GS}=10V,R_{GEN}=3Ω	td(ON)	-	7	-	nS
Turn-on Rise Time		tr	-	7	-	
Turn-Off Delay Time		td(OFF)	-	29	-	
Turn-on Fall Time		tf	-	7	-	
Total Gate Charge	V_{DS}=50V,I_D=10A, V_{GS}=10V	Q_G	-	39	-	nC
Gate to Source Charge		Q_{GS}	-	8	-	
Gate to Drain Charge		Q_{GD}	-	12	-	
Diode Forward Voltage (Note 3)	V_{GS}=0V,I_S=20A	VSD	-	1.2	-	V

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Diode Forward Current (Note 2)		I_S	-	-	30	A
Reverse Recovery Time	TJ = 25°C, IF = 10A di/dt = 100A/μs (Note3)	trr	-	32	-	nS
Reverse Recovery Charge		Qrr	-	53	-	uC
Forward Turn-On Time		ton	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)			

Note:
1、Repetitive Rating: Pulse width limited by maximum junction temperature.
2、Surface Mounted on FR4 Board, t ≤ 10 sec.
3、Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4、Guaranteed by design, not subject to production
5、EAS Condition : Tj=25℃,VDD=50V,VG=10V,L=0.5mH,Rg=25Ω, IAS=32A

Ratings and Characteristic Curves

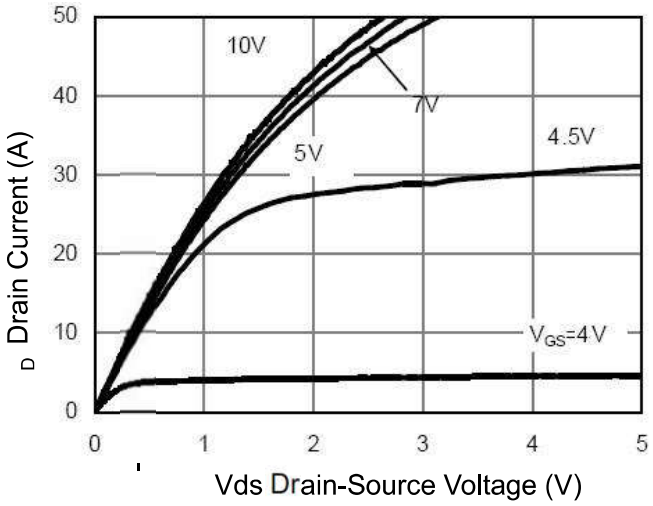


Figure 1 Output Characteristics

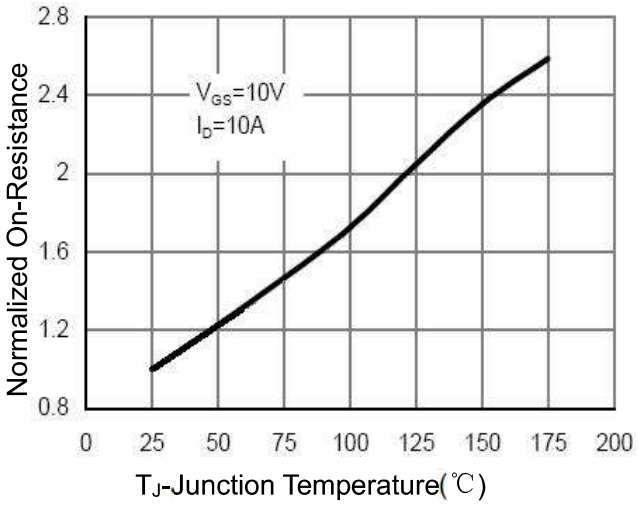


Figure 4 Rdson-JunctionTemperature

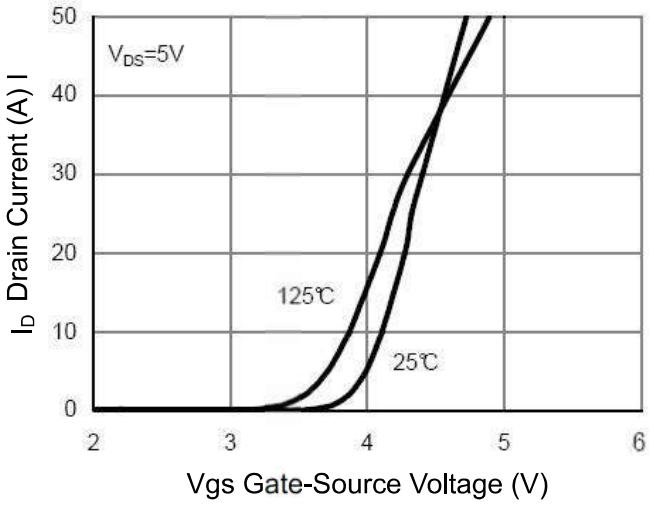


Figure 2 Transfer Characteristics

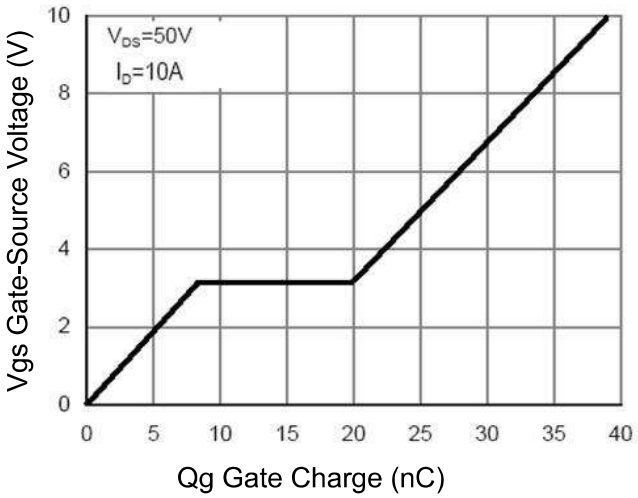


Figure 5 Gate Charge

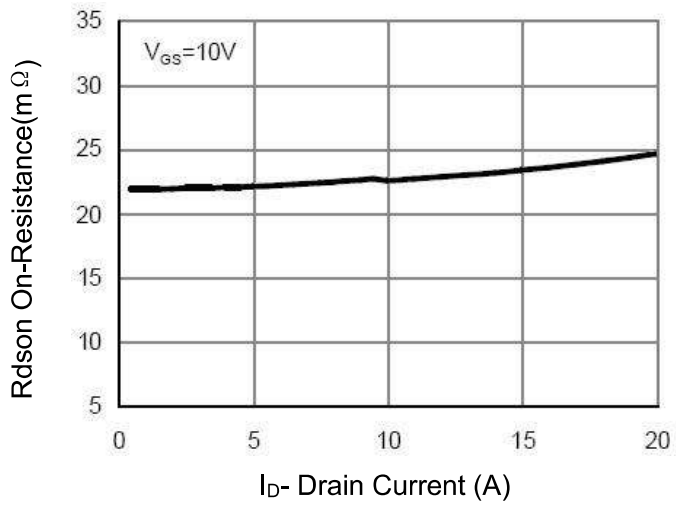


Figure 3 Rdson- Drain Current

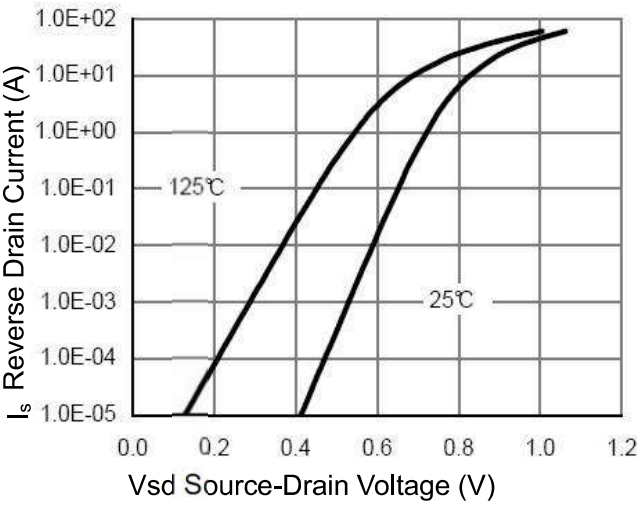


Figure 6 Source- Drain Diode Forward

Ratings and Characteristic Curves

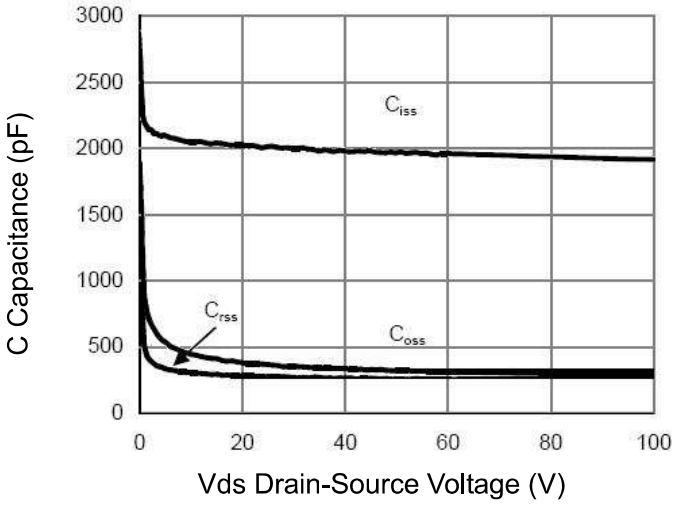


Figure 7 Capacitance vs Vds

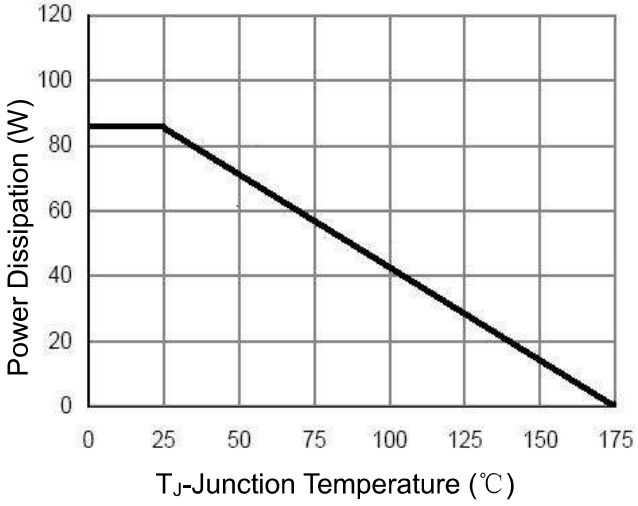


Figure 9 Power De-rating

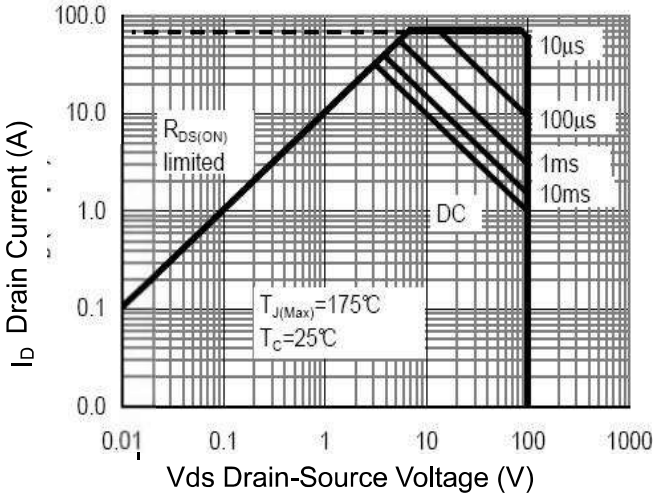


Figure 8 Safe Operation Area

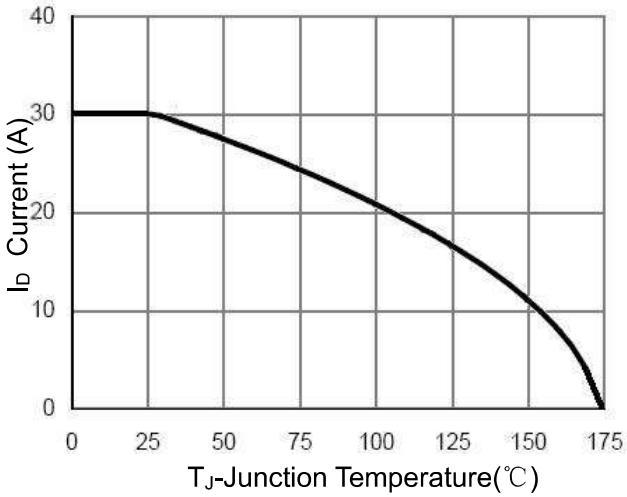


Figure 10ID Current- Junction Temperature

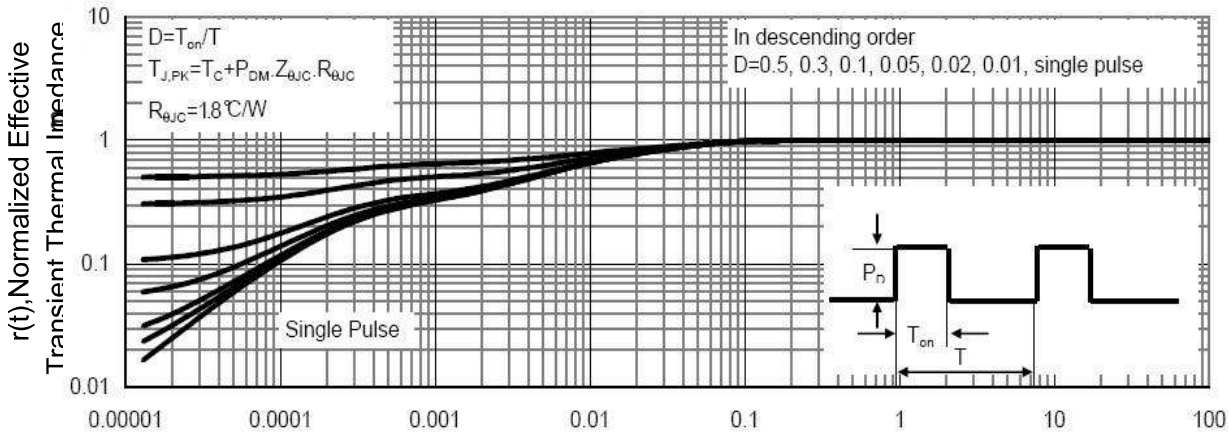
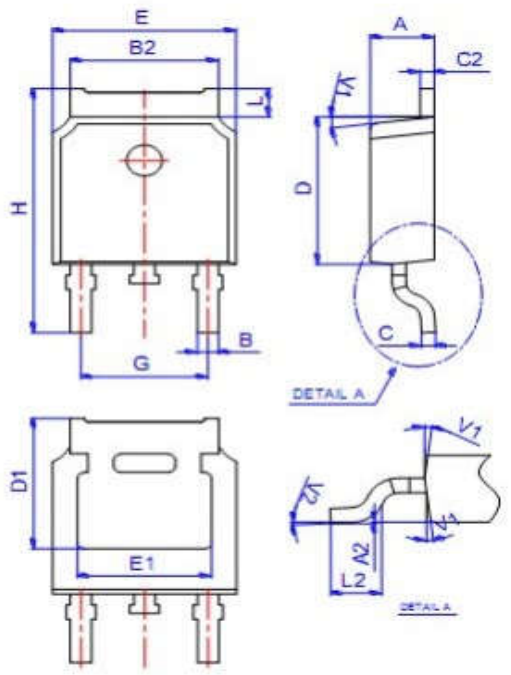


Figure 11 Normalized Maximum Transient Thermal Impedance

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