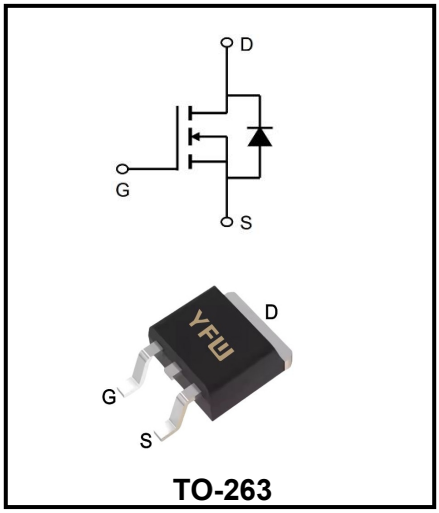
800V N-Channel mode Power MOSFET

MAIN CHARACTERISTICS

I_D	7A
V_{DSS}	800V
R_{DSON}-typ(@V_{GS}=10V)	＜1.8Ω(Typ:1.4Ω)



TO-263

FEATURES

- Fast Switching Capability
- Avalanche Energy Specified
- Improved dv/dt Capability, High Ruggedness

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	800	V
Gate - Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	7	A
Pulsed Drain Current(note1)	I_{DM}	26	A
Power Dissipation	P_D	142	W
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	580	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +155	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.88	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	62.5	°C/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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=250uA	BV_{DSS}	800	-	-	V
Zero Gate Voltage Drain Current	V_{DS} = 800 V, V_{GS} = 0 V	I_{DSS}	-	-	10	μA
Gate Source Leakage	V_{GS} = ± 30 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	3.0	-	5.0	V
Drain-Source On-Resistance	V_{GS}=10V, I_D=3.5A	$R_{DS(ON)}$	-	1.4	1.8	Ω
Forward Transconductance (Note4)	V_{DS} = 50V, I_D = 3.5A	gfs	-	5.5	-	S
Input Capacitance	V_{DS}=25V V_{GS}=0V f=1MHz	C_{iss}	-	1296	-	pF
Output Capacitance		C_{oss}	-	120	-	
Reverse Transfer Capacitance		C_{rss}	-	10	-	
Turn-on delay time(Note4,5)	V_{DD}=400V I_D=7.0A R_G=25Ω	$t_{d(on)}$		35	80	ns
Turn-on Rise Time(Note4,5)		T_r		100	210	ns
Turn-Off Delay Time(Note4,5)		$t_{d(OFF)}$		50	110	ns
Turn-on Fall Time(Note4,5)		t_f		60	130	ns
Total Gate Charge(Note4,5)	V_{DD}=640V I_D=7.0A V_{GS}=10V	Q_g	-	27	35	nC
Gate to Source Charge(Note4,5)		Q_{gs}	-	8.2	-	
Gate to Drain Charge(Note4,5)		Q_{gd}	-	11	-	
Body Diode Voltage	V_{GS}=0V, I_S =7.0A	V_{SD}	-	-	1.4	V
Maximun Body-Diode Continuous Current		I_S	-	-	7.0	A
Maximun Body-Diode Pulsed Current		I_{SM}	-	-	26	A
Reverse Recovery Time(Note1)	V_{GS} = 0V,I_{SD} = 7.0A di_F/dt =100A /μs	t_{rr}	-	650	-	nS
Reverse Recovery Charge(Note1)		Q_{rr}	-	7.0	-	uC

Note

1. Repeativity rating: pulse width limited by junction temperature

2. L=25mH, I_{AS} =7.0A, R_G =25Ω , Starting T_J =25°C

3. I_{SD}≤7.0A, di/dt≤200A/μs, V_{DD}≤BV_{DSS}, Starting T_J=25°C

4. Pulse Test: Pulse Width≤300μs,Duty Cycle≤2%

5. Essentially independent of operating temperature.

Test Circuits and Waveforms

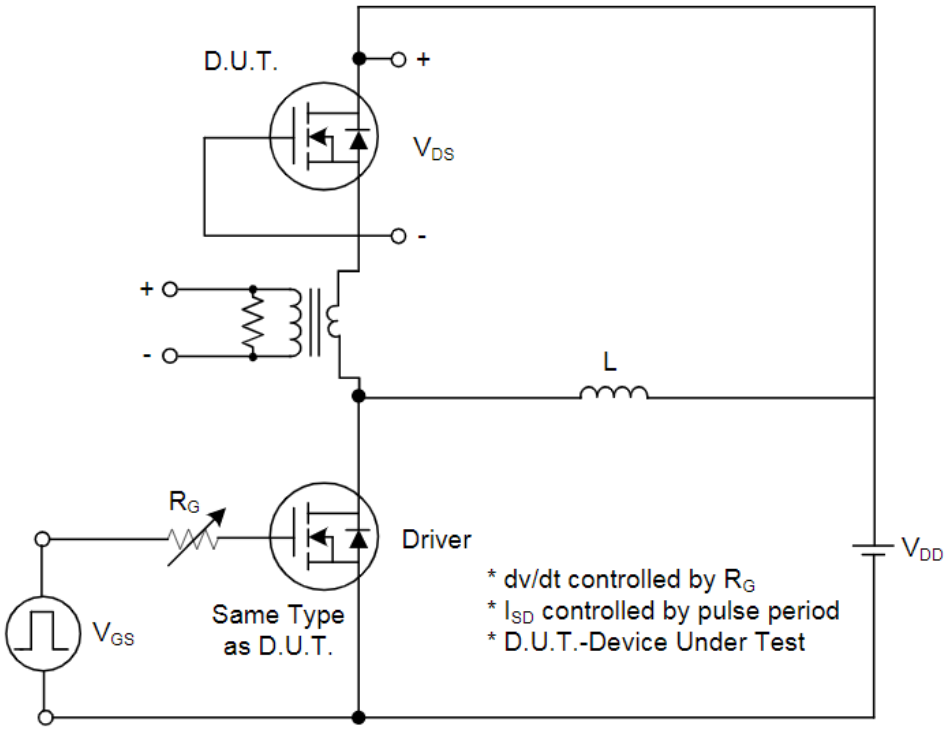


Figure 1. Peak Diode Recovery dv/dt Test Circuit

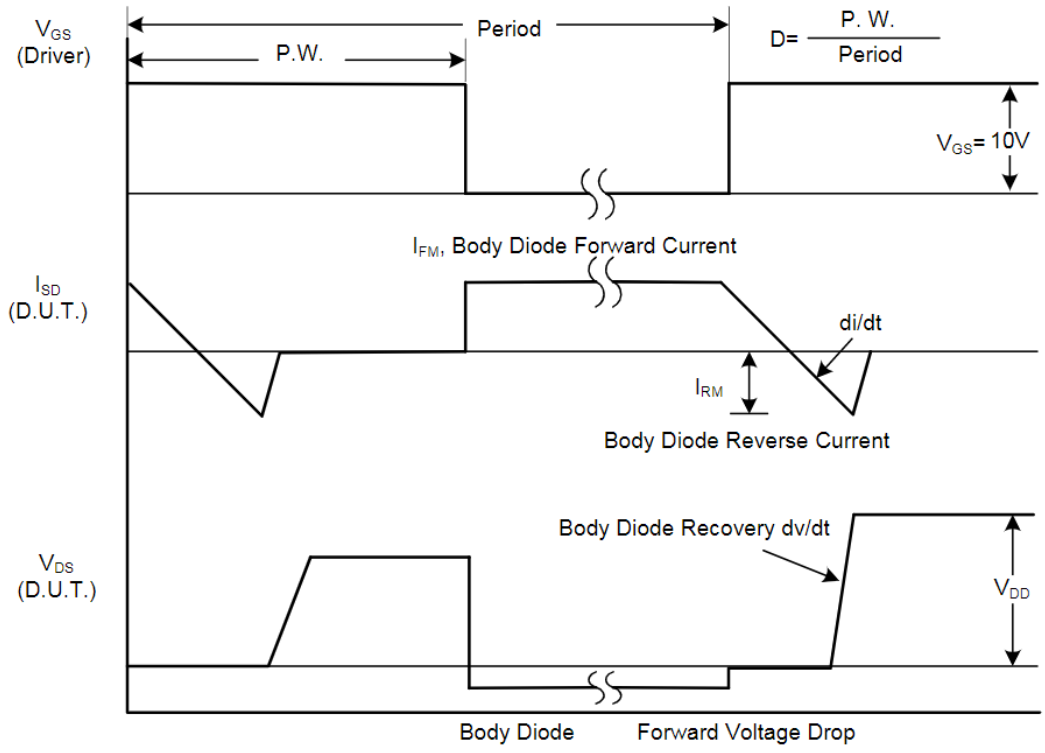


Figure 2. Peak Diode Recovery dv/dt Waveforms

Typical Characteristics

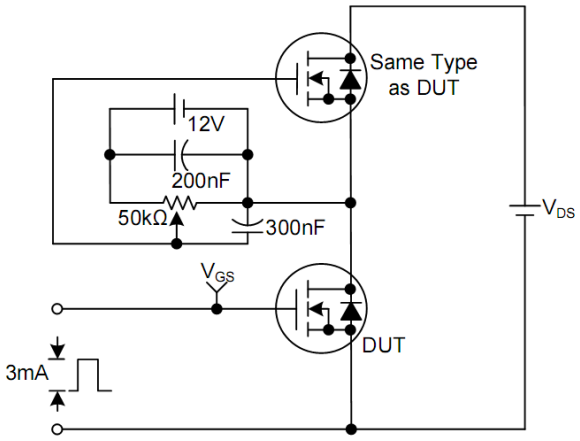


Figure 3. Gate Charge Test Circuit

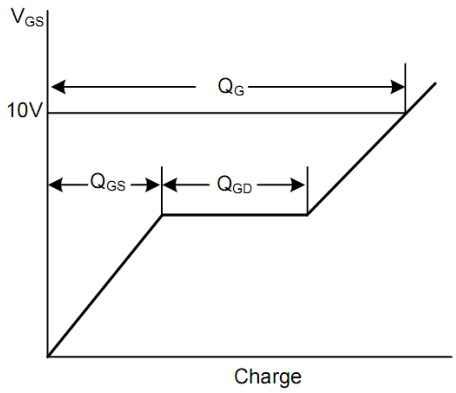


Figure 4. Gate Charge Waveforms

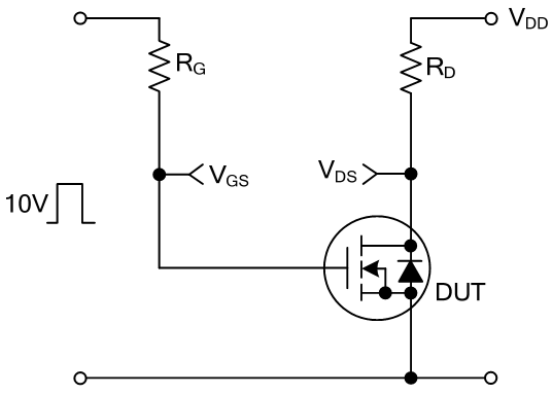


Figure 5. Resistive Switching Circuit

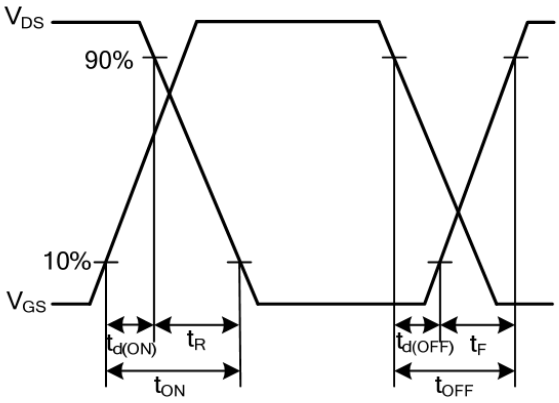


Figure 7. Resistive Switching Waveforms

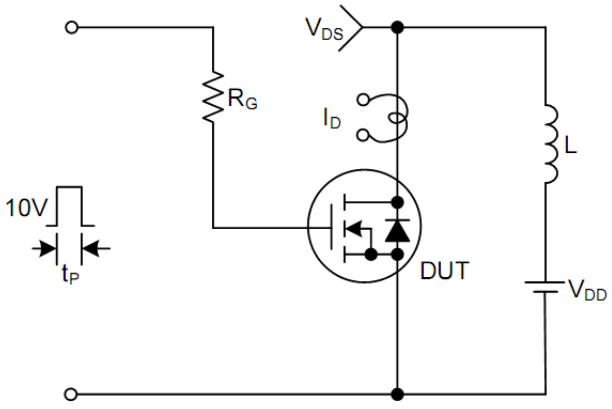


Figure 7. Unclamped Inductive Switching Test Circuit

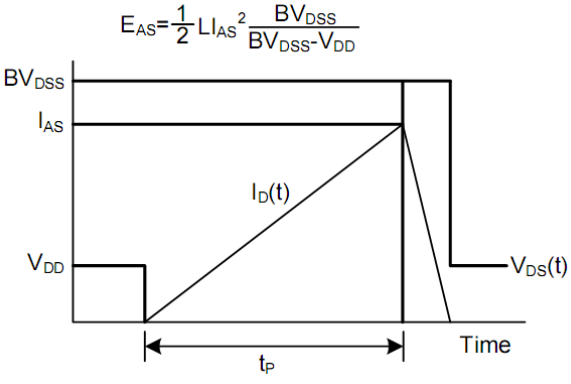


Figure 8. Unclamped Inductive Switching Waveforms

Typical Characteristics

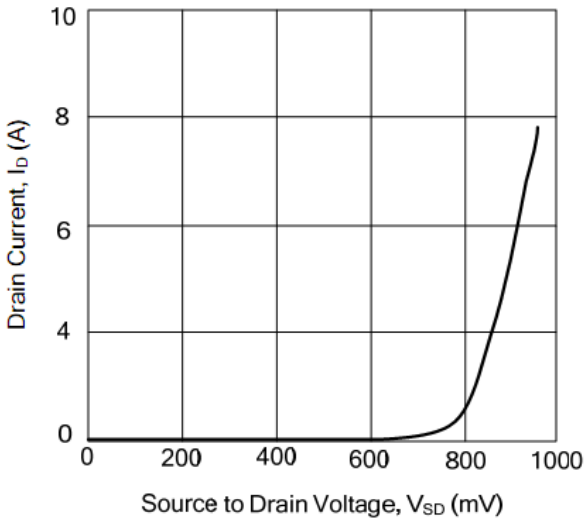


Figure 9. Drain Current vs. Source to Drain Voltage

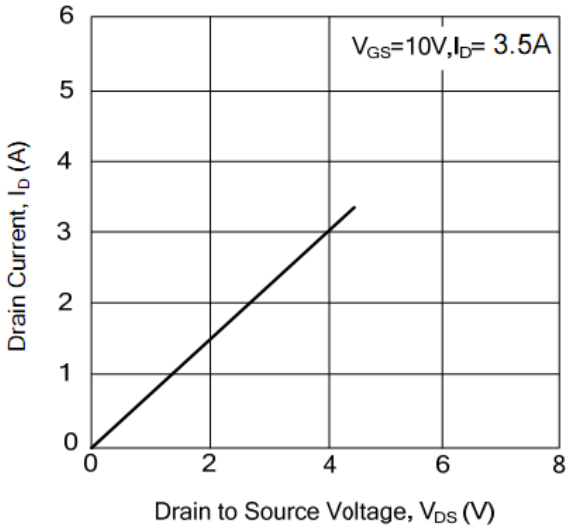


Figure 10. Drain-Source On-State Resistance Characteristics

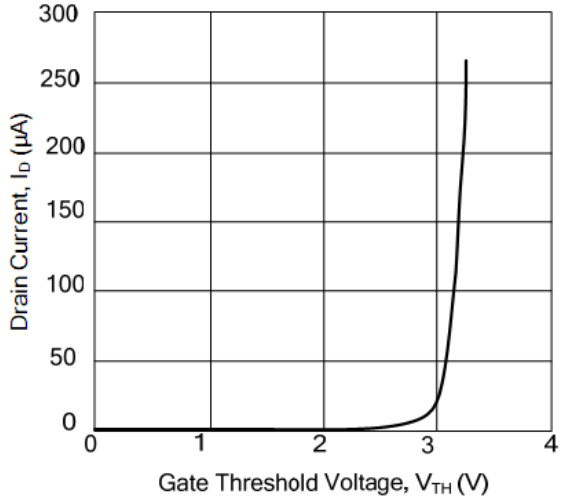


Figure 11. Drain Current vs. Gate Threshold Voltage

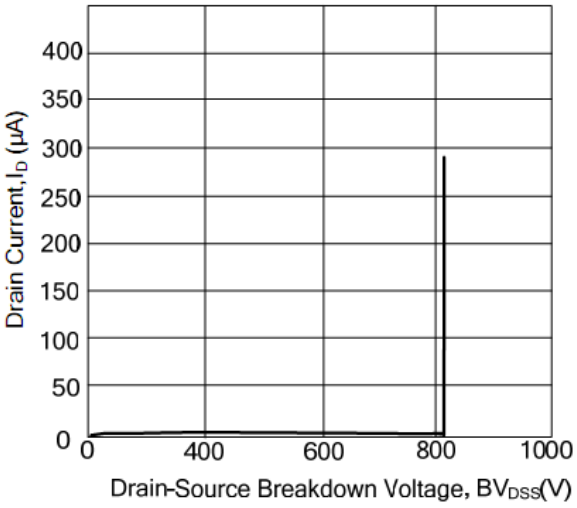
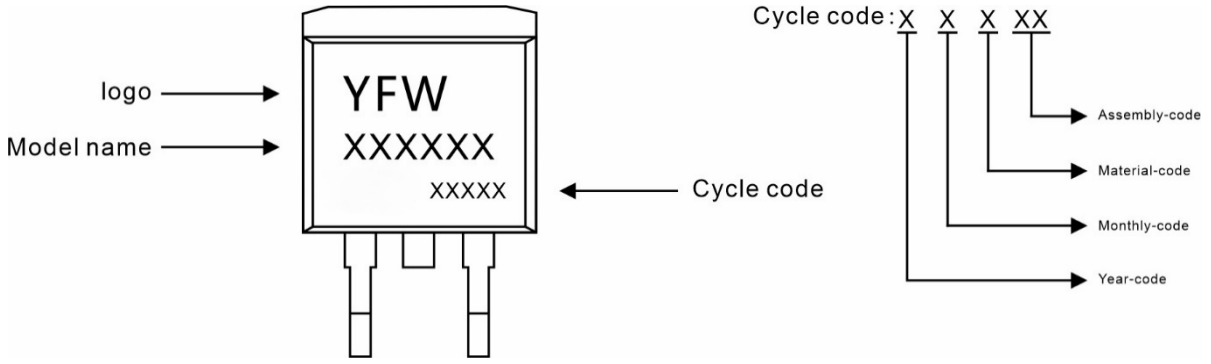


Figure 12. Drain Current vs. Drain-Source Breakdown Voltage

Marking Diagram

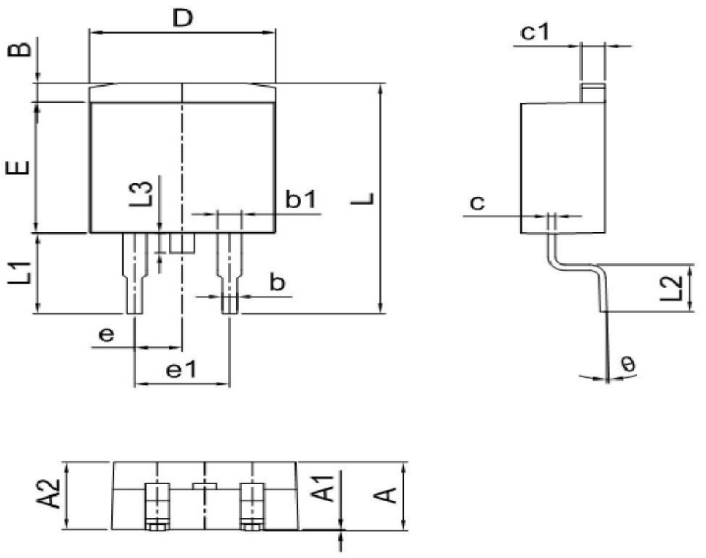


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW7N80AS	TO-263	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

Package Dimensions

TO-263



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	0.00	0.15	0.000	0.006
A2	4.30	4.55	0.169	0.179
B	1.10	1.50	0.043	0.059
b	0.70	0.90	0.028	0.035
b1	1.20	1.50	0.047	0.059
c	0.30	0.60	0.012	0.024
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
L	15.00	15.30	0.591	0.602
L1	5.20	5.40	0.205	0.213
L2	2.40	2.60	0.094	0.102
L3	1.60	1.80	0.063	0.071

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