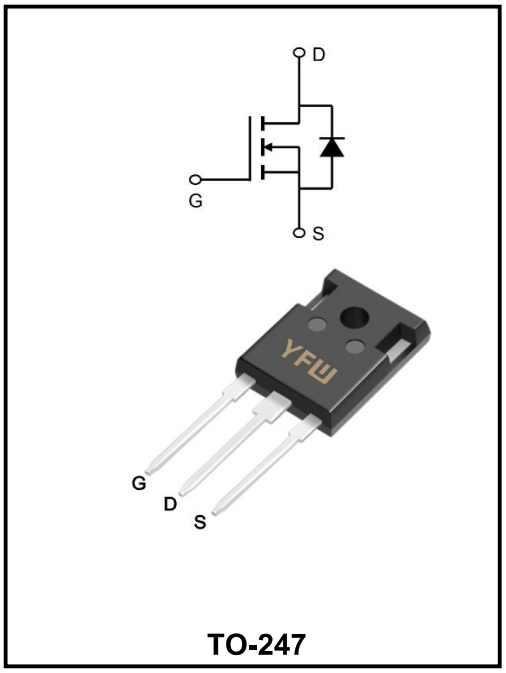
200V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	90A
V_{DS}	200V
R_{DSON}-typ(@V_{GS}=10V)	<24mΩ(Typ:21mΩ)



TO-247

FEATURES

Adopt advanced trench technology to provide excellent Battery protection or in other Switching application.

APPLICATIONS

- Motor control and drive
- Battery management
- UPS (Uninterrupible Power Supplies)

MECHANICAL DATA

- Case:TO-247/AP
- Mounting Position: Any

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	90	A
Pulsed Drain Current (Note1)	I_{DM}	360	A
Power Dissipation	P_D	375	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	968	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.45	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle
Note2:Limited by TJmax , starting TJ=25°C, L = 1mH, V_{DS} =50V.,V_{GS} =10V

Electrical Characteristics at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V,I_D = 250μA	BV_{DSS}	200	-	-	V
Drain-Source Leakage Current	V_{DS} = 200 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS} = V_{GS} , I_D = 250 μA	$V_{GS(th)}$	3	-	5	V
Drain-Source On-State Resistance	V_{GS} = 10 V, I_D = 30 A	$R_{DS(on)}$	-	21	24	mΩ
Forward Transconductance	V_{DS} = 5 V, I_D = 40 A	gfs	-	65	-	S
Input Capacitance	V_{GS} = 0 V V_{DS} = 25 V f = 1 MHz	C_{iss}	-	6500	-	pF
Output Capacitance		C_{oss}	-	500	-	
Reverse Transfer Capacitance		C_{rss}	-	210	-	
Turn-on Delay Time(Note2)	V_{GS}=10V V_{DD} =50V R_G= 2.5 Ω I_D=40A	$t_{d(ON)}$	-	45	-	ns
Rise Time(Note2)		t_r	-	70	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	110	-	
Fall Time(Note2)		t_f	-	90	-	
Total Gate Charge(Note2)	V_{DS}=100V V_{GS}=10V I_D=40A	Q_G	-	85	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	15	-	
Gate to Drain Charge(Note2)		Q_{GD}	-	25	-	
Maximun Body-Diode Continuous Current		I_S	-	-	90	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	360	A
Drain-Source Diode Forward Voltage	V_{GS}=0V , I_S=30A , T_J=25°C	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	T_J = 25°C, I_F= 30A di / dt = 100A/μs	t_{rr}	-	110	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	0.55	-	nC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

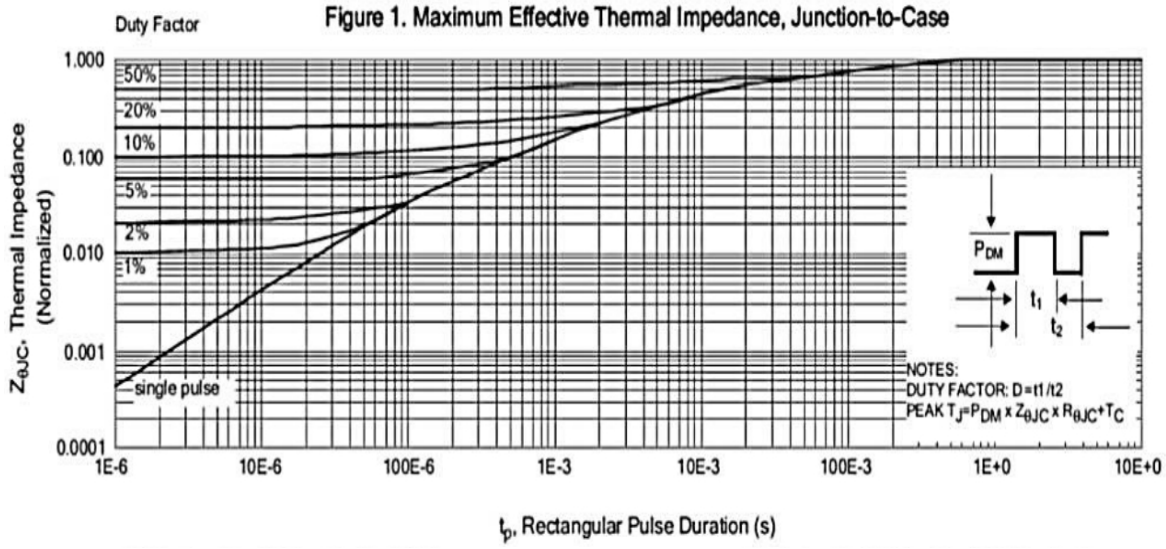


Figure 2 . Max. Power Dissipation vs Case Temperature

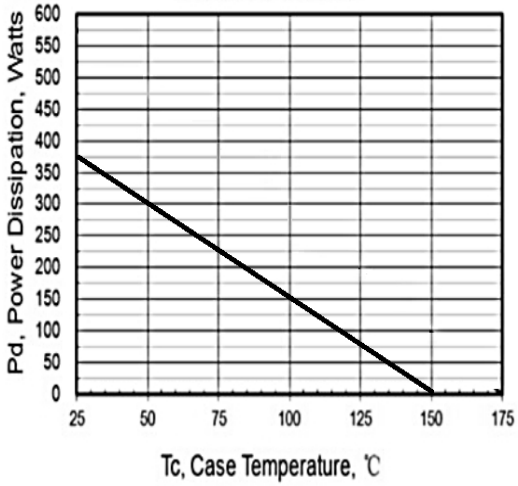


Figure 3 .Maximum Continuous Drain Current vs Tc

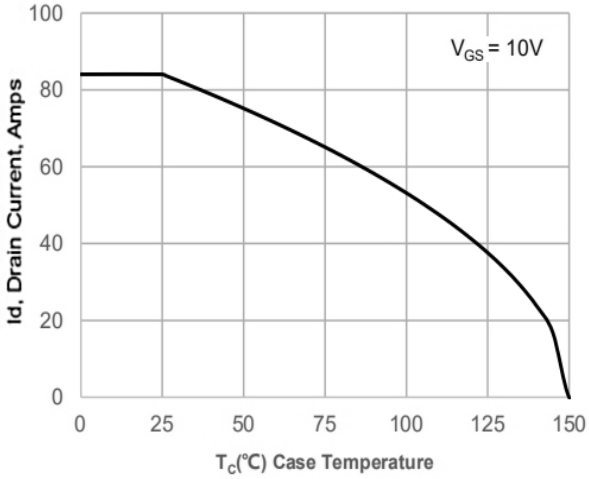


Figure 4. Typical Output Characteristics

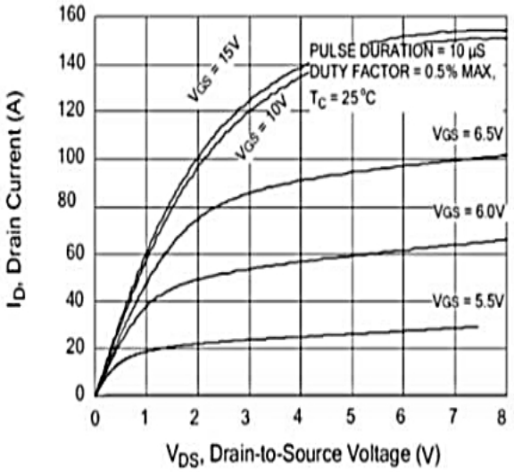
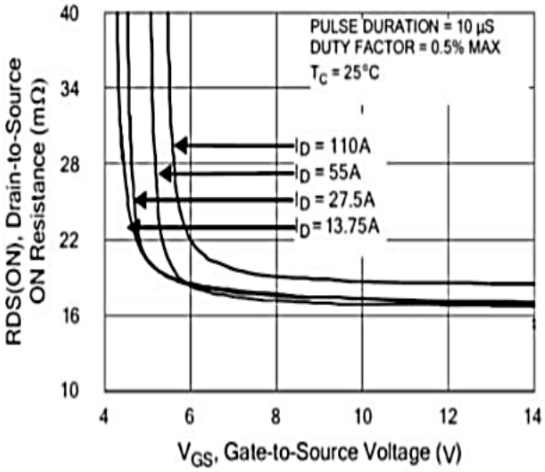


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



RATINGS AND CHARACTERISTIC CURVES

Figure 6. Peak Current Capability

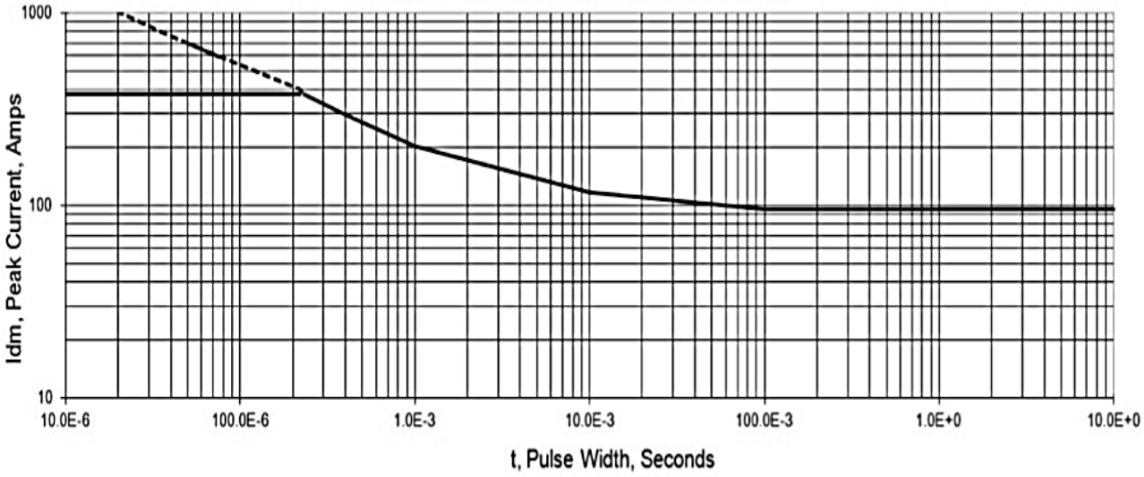


Figure 7. Typical Transfer Characteristics

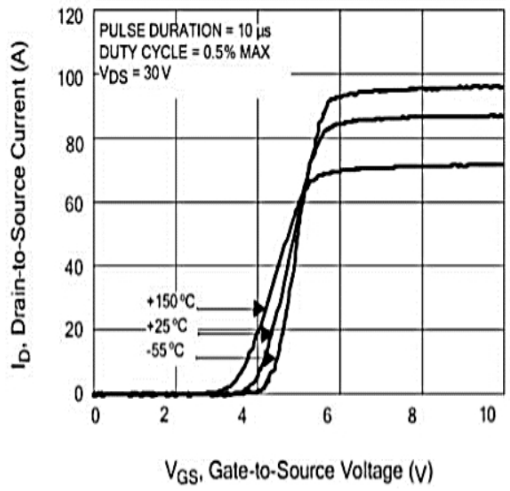


Figure8. Unclamped Inductive Switching Capability

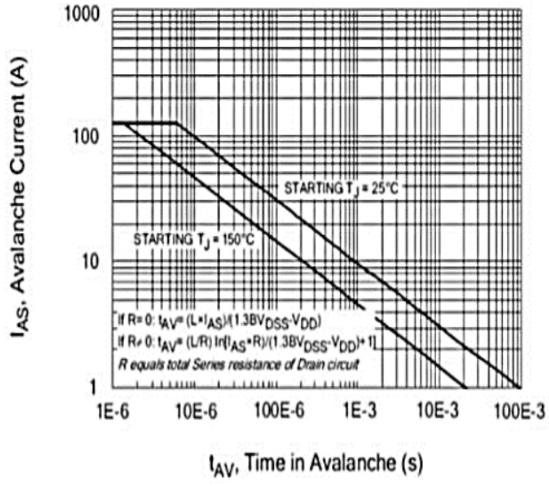


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

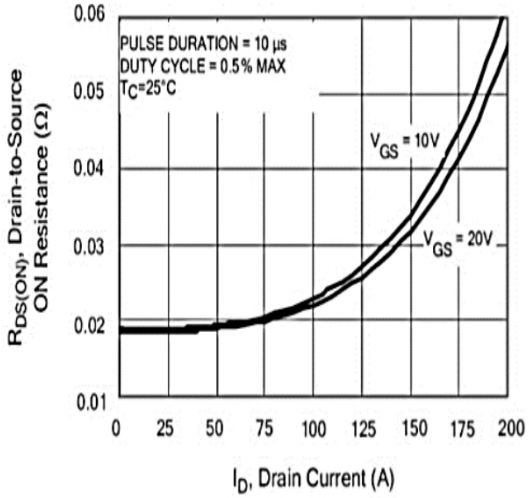
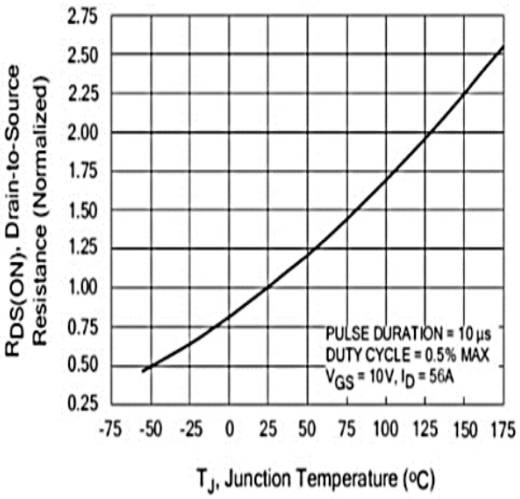


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature



RATINGS AND CHARACTERISTIC CURVES

Figure 11. Typical Breakdown Voltage vs Junction Temperature

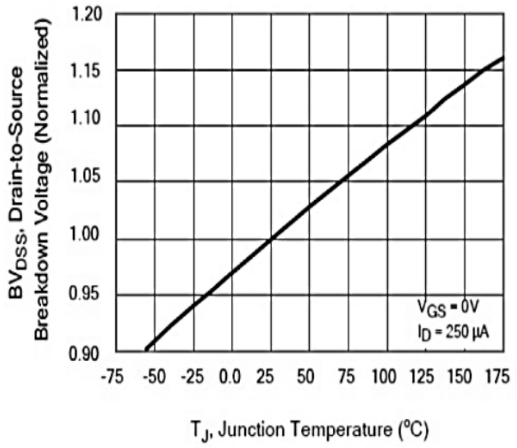


Figure 12. Typical Threshold Voltage vs Junction Temperature

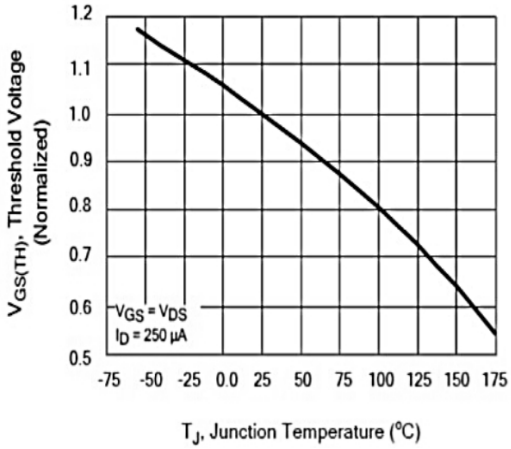


Figure 13 . Maximum Safe Operating Area

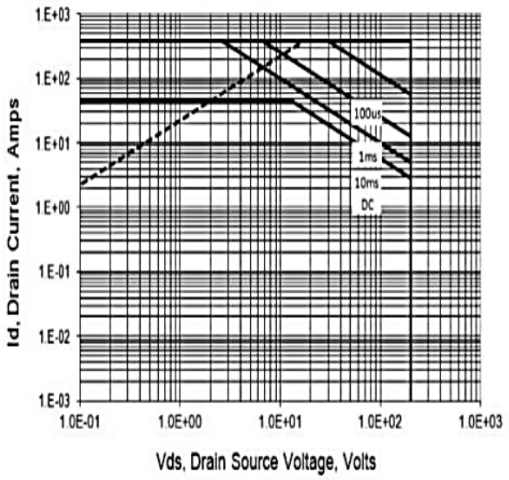


Figure 14. Capacitance vs Vds

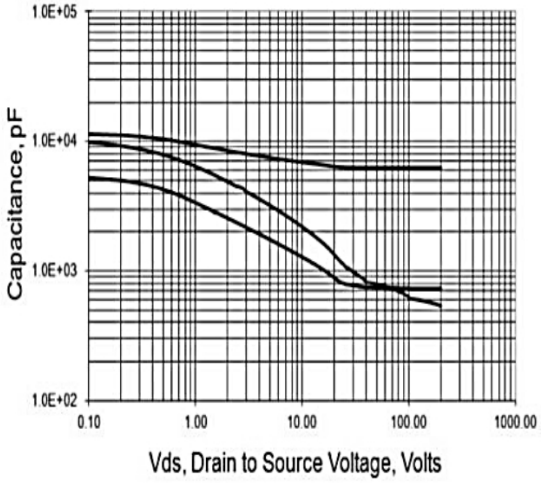


Figure 15 .Typical Gate Charge

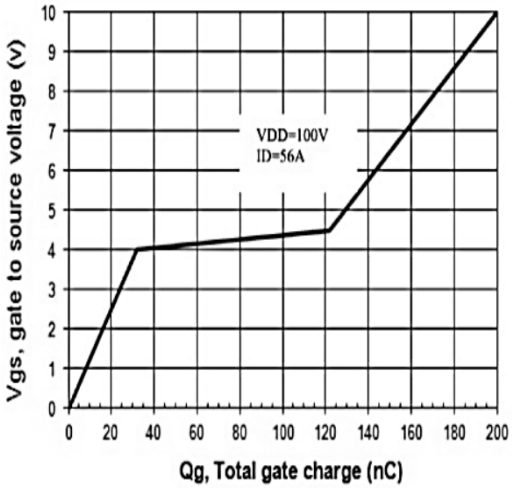
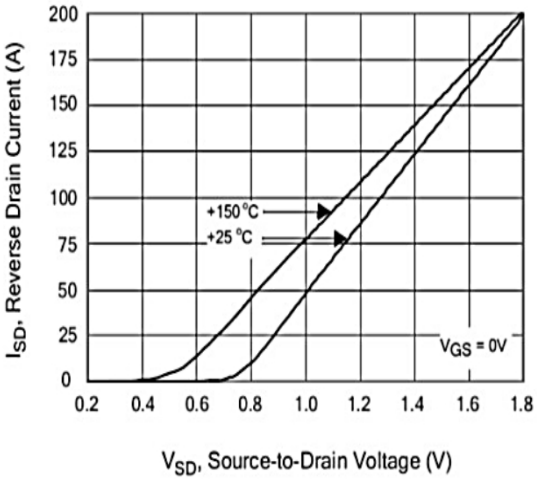
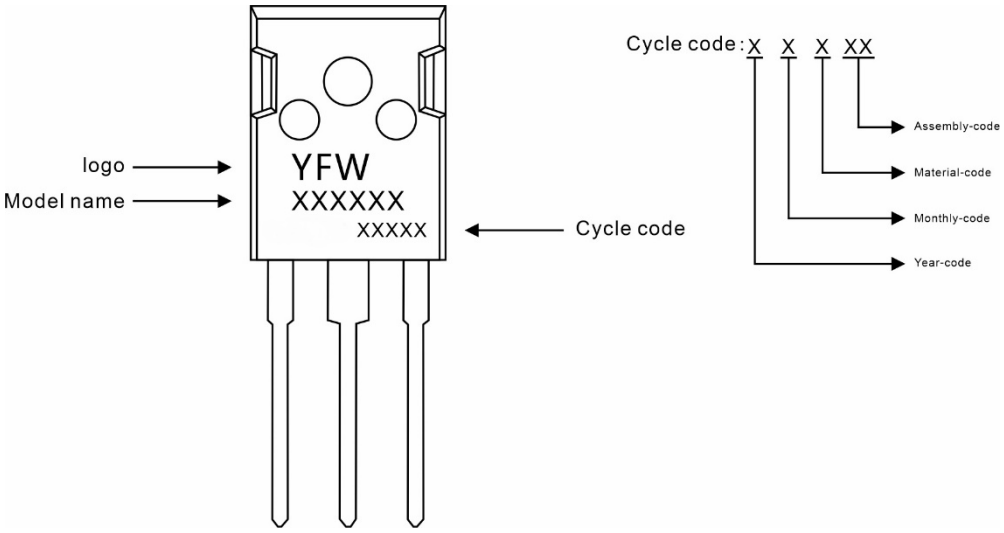


Figure 16. Typical Body Diode Transfer Characteristics



Marking Diagram

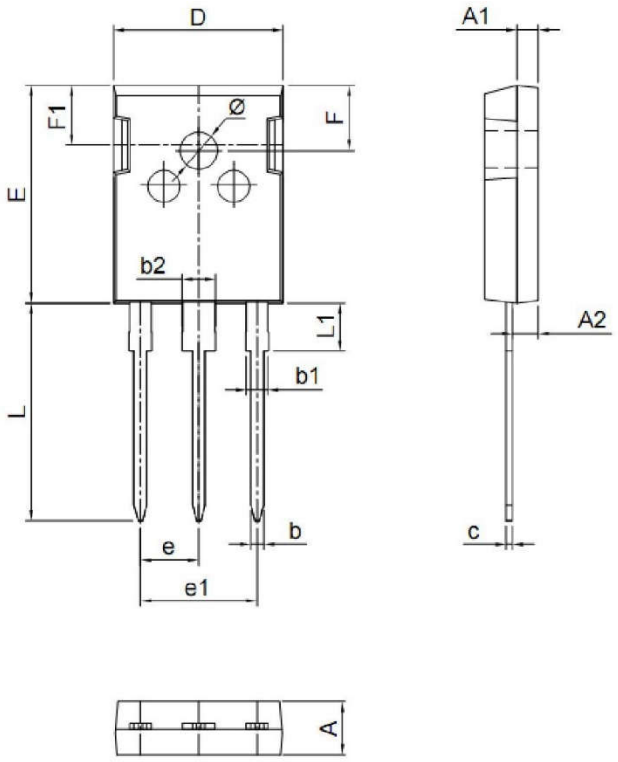


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW90N20AP	TO-247	0.209oz(5.93g)	30pcs/tube	600PCS/Box 2400PCS/Carton

Package Dimensions

TO-247



Symbol	Dimensions in mm		Dimensions in Inch	
	Min.	Max.	Min.	Max.
A	4.90	5.10	0.193	0.201
A1	1.90	2.10	0.075	0.083
A2	2.29	2.54	0.090	0.100
b	1.00	1.40	0.039	0.055
b1	2.00	2.20	0.079	0.087
b2	3.00	3.20	0.118	0.126
c	0.50	0.70	0.020	0.028
D	15.75	16.05	0.620	0.632
E	20.20	20.80	0.795	0.819
e	5.45 (BSC)		0.215 (BSC)	
e1	10.90 (BSC)		0.429 (BSC)	
F	6.05	6.25	0.238	0.246
F1	5.80	6.00	0.228	0.236
L	20.10	20.40	0.791	0.803
L1	4.05	4.35	0.159	0.171
Φ	3.50	3.70	0.138	0.146

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