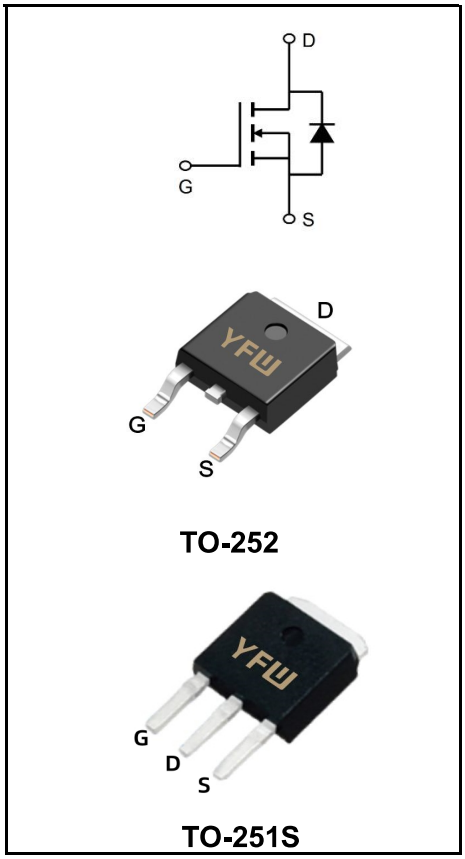
30V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	80A
V_{DSS}	30V
R_{DSON}-typ(@V_{GS}=10V)	＜5.3mΩ(Typ:3.9mΩ)



FEATURES

- Advanced Trench Technology
- Excellent RDS(ON) and Low Gate Charge

Application

- Load Switch
- PWM Application
- Power Management

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current(Note1)	I_{DM}	280	A
Total Power Dissipation	P_D	50	W
Single Pulse Avalanche Energy(Note1)	E_{AS}	81	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	31	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

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}	30	-	-	V
Zero Gate Voltage Drain Current	V_{DS} =30 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	1	-	2	V
Drain-Source on-Resistance	V_{GS}=10V, I_D=30A	$R_{DS(ON)}$	-	3.9	5.3	mΩ
	V_{GS} = 4.5 V, I_D = 25 A	$R_{DS(ON)}$		6.8	9.5	mΩ
Input Capacitance	V_{DS}=15V V_{GS}=0V f=1MHz	C_{iss}	-	1788	-	pF
Output Capacitance		C_{oss}	-	225	-	
Reverse Transfer Capacitance		C_{rss}	-	180	-	
Total Gate Charge(Note2)	I_D = 30 A, V_{DD} = 15 V, V_{GS} = 10 V	Q_g	-	34	-	nC
Gate-Source Charge(Note2)		Q_{gs}	-	6.5	-	
Gate-Drain Charge(Note2)		Q_{gd}	-	7.5	-	
Turn-on delay time(Note2)	V_{DD}=15V V_{GS}=10V R_G=3 Ω I_D = 30 A	$t_{d(on)}$	-	7	-	ns
Rise Time(Note2)		T_r	-	14	-	
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	34	-	
Fall Time(Note2)		t_f	-	11	-	
Maximun Body-Diode Continuous Current		I_S	-	-	80	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	280	A
Drain-Source Diode Forward Voltage	I_{SD} = 30 A	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	I_{SD} = 20 A, V_{GS} = 0 V, dIF / dt = 100 A/μs	t_{rr}	-	10	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	1.7	-	nC

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

Ratings and Characteristic Curves

Figure 1: Output Characteristics

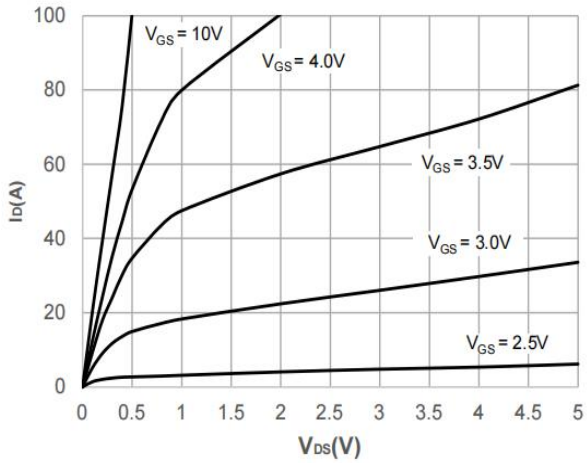


Figure 2: Typical Transfer Characteristics

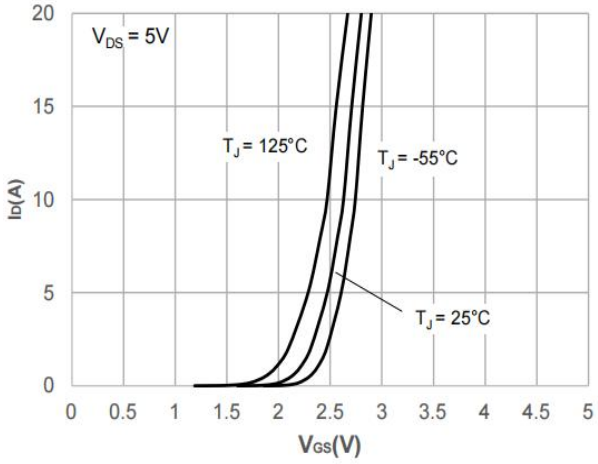


Figure 3: On-resistance vs. Drain Current

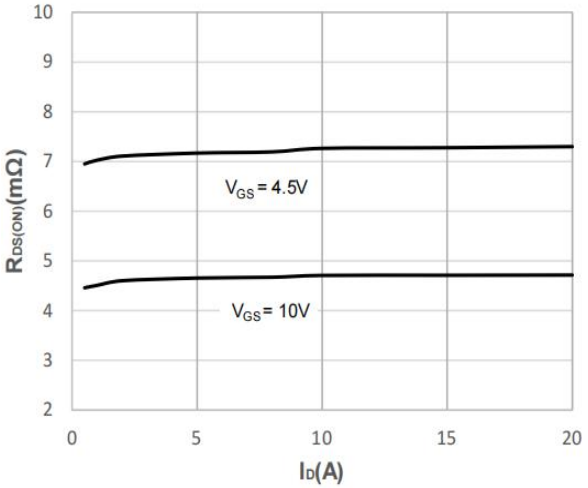


Figure 4: Body Diode Characteristics

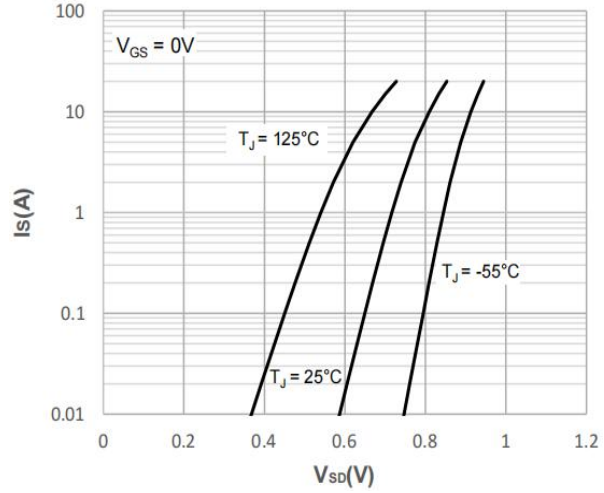


Figure 5: Gate Charge Characteristics

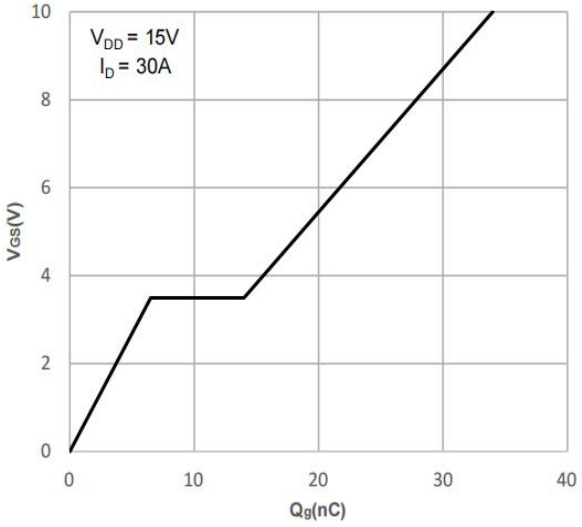
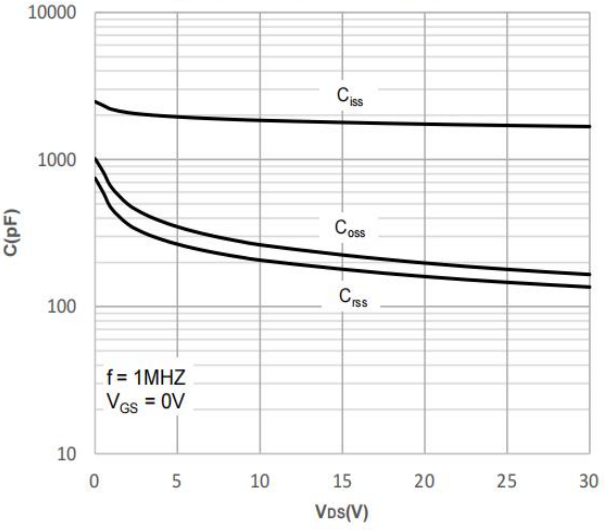


Figure 6: Capacitance Characteristics



Ratings and Characteristic Curves

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

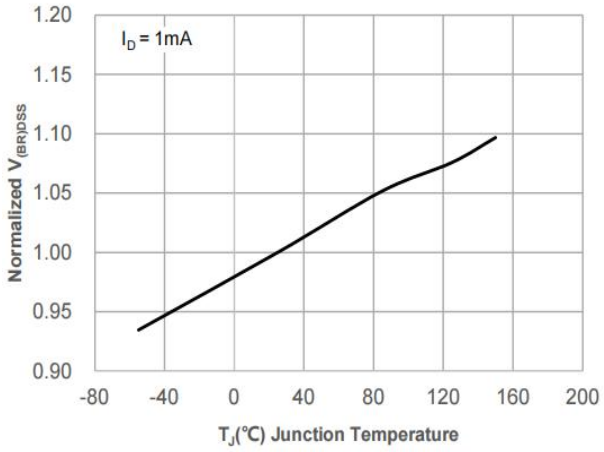


Figure 8: Normalized on Resistance vs. Junction Temperature

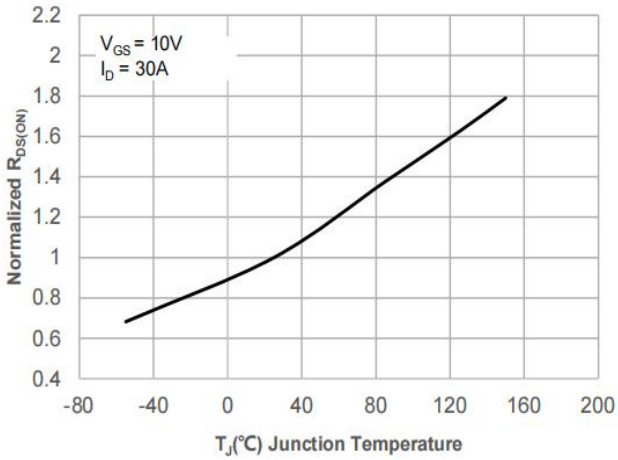


Figure 9: Maximum Safe Operating Area

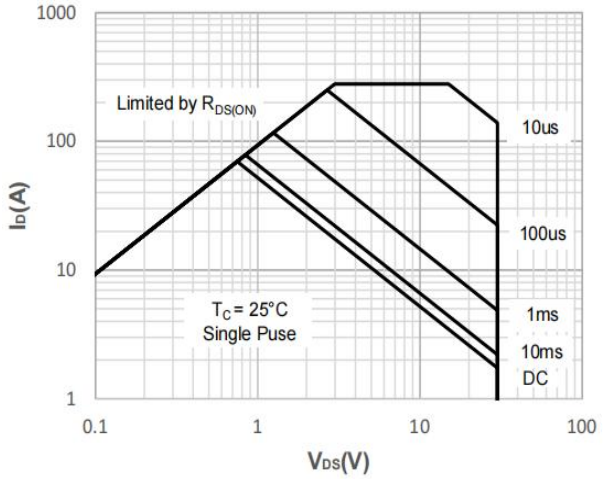


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

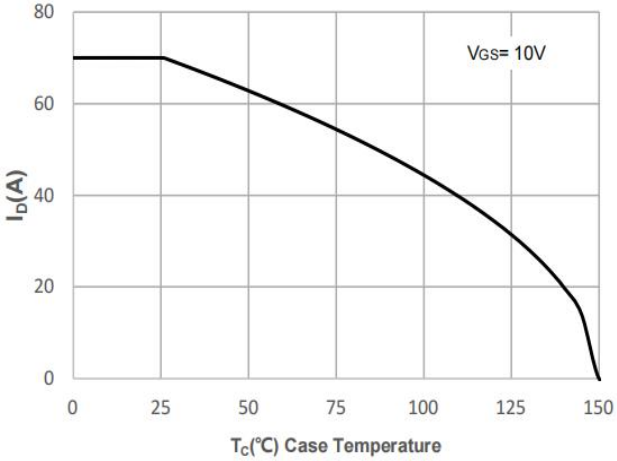


Figure 11: Normalized Maximum Transient Thermal Impedance

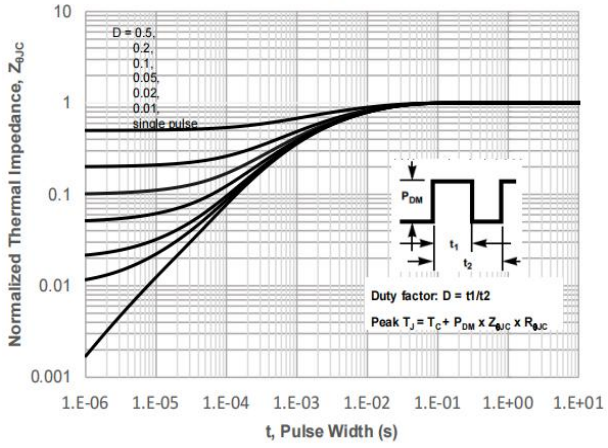
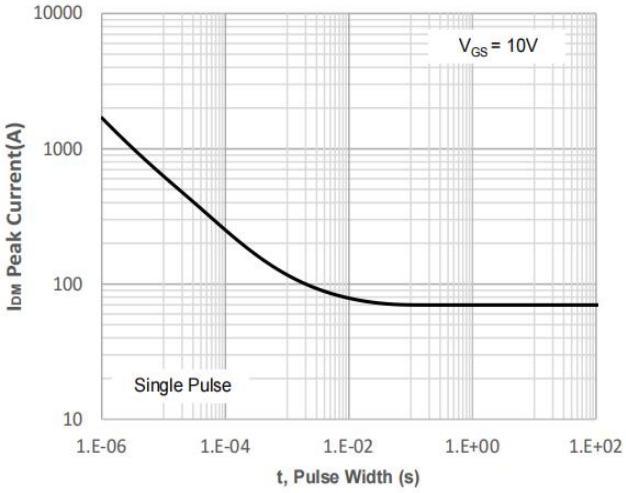
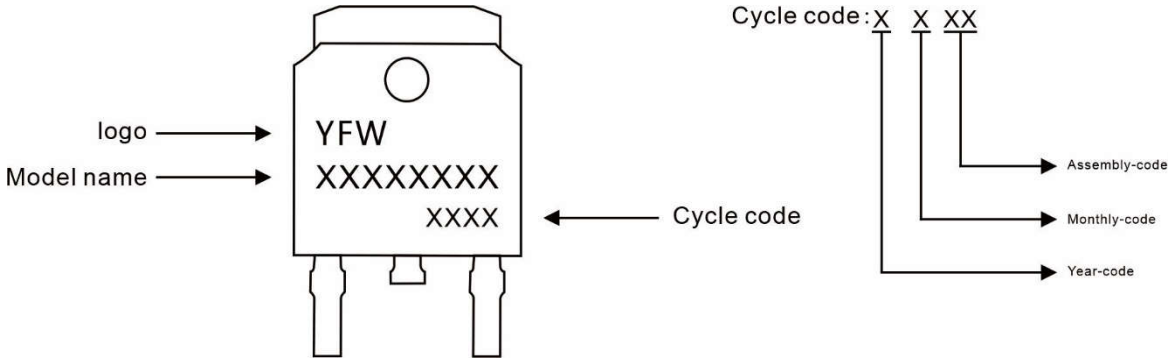


Figure 12: Peak Current Capacity



Marking Diagram

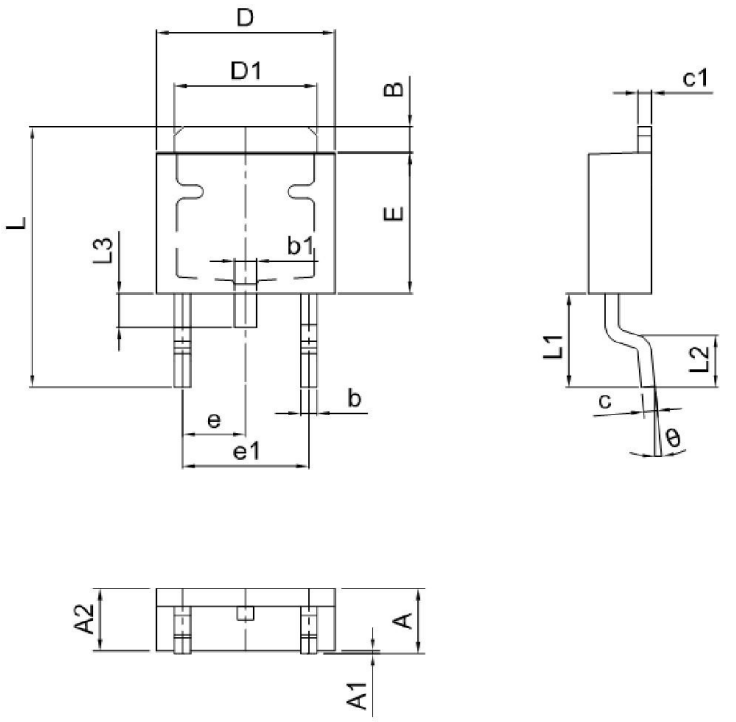


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N03AD	TO-252	0.011oz(0.32g)	2500pcs/reel	5000pcs/box 25000pcs/Carton

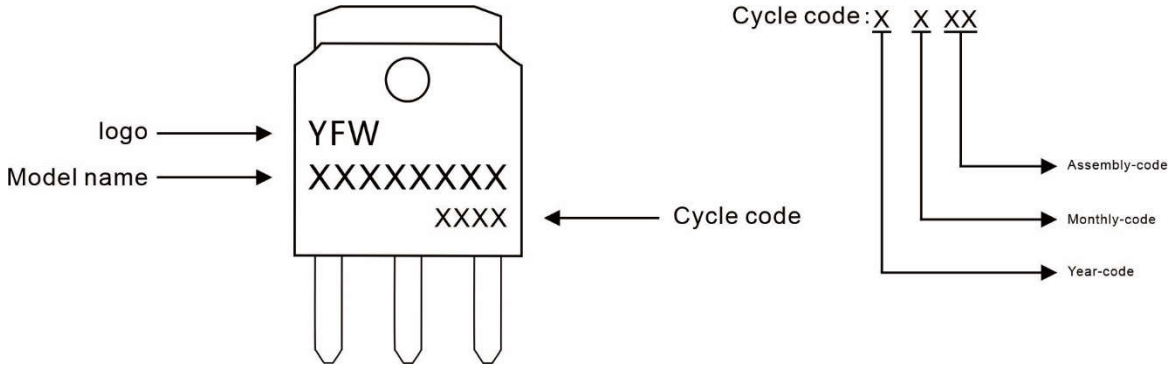
Package Dimensions

TO-252



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	10.00	11.00	0.393	0.433
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059

Marking Diagram

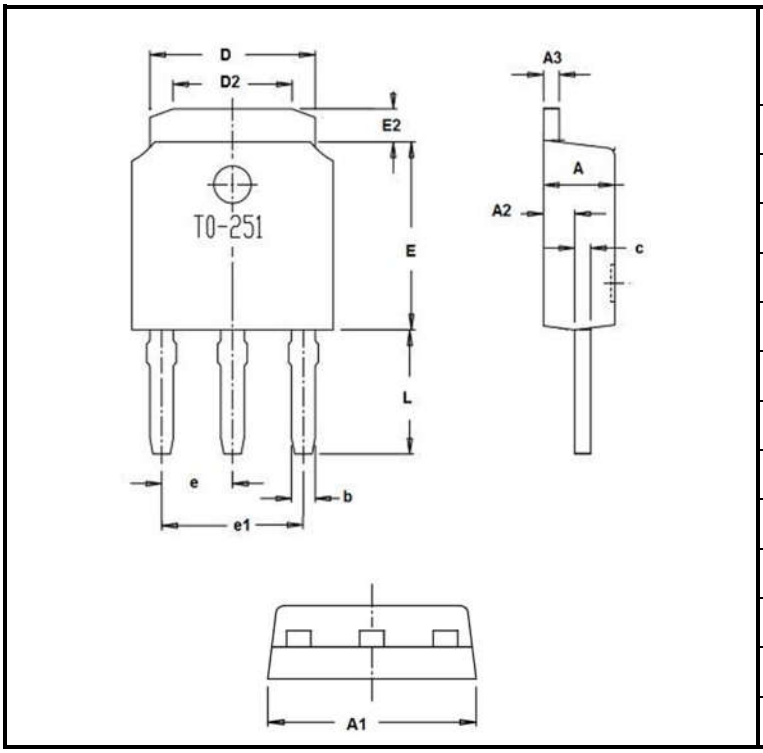


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW80N03AMJ	TO-251S	0.011oz(0.32g)	80pcs/tube	4000pcs/box 24000pcs/Carton

Package Dimensions

TO-251S



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.1	2.5	0.083	0.098
A1	6.3	6.9	0.248	0.271
A2	0.9	1.1	0.035	0.043
A3	TYP0.5		TYP0.019	
b	0.6	0.8	0.024	0.031
c	0.4	0.5	0.015	0.020
D	5.3	5.5	0.209	0.217
D2	3.65	4.05	0.144	0.159
E	5.8	6.4	0.228	0.252
E2	0.9	1.4	0.035	0.055
e	TYP2.29		TYP0.090	
e1	TYP4.58		TYP0.180	
L	3.7	4.3	0.146	0.169

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