

650V N-Channel Super Junction MOSFE

MAIN CHARACTERISTICS

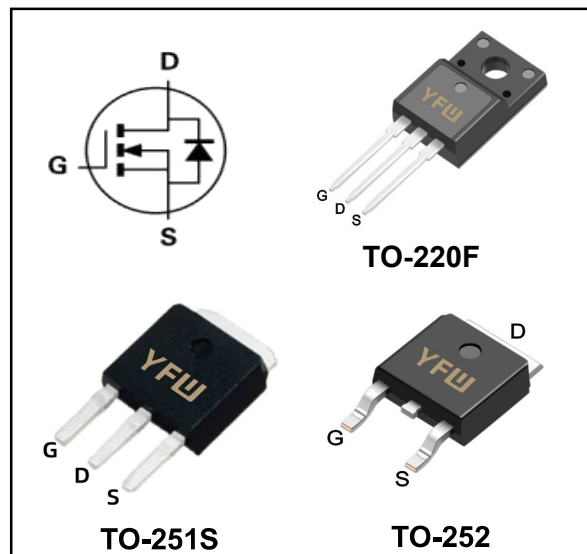
I_D	7 A
V_{DSS}	650V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 600m Ω (Type:530m Ω)

Application

- ◆Solar inverters
- ◆LCD/LED/PDP TV
- ◆Telecom/Server Power supplies
- ◆AC-DC Power Supply

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°C maximum, 10s per JESD 22-B106



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value		Units
		220F	252/251	
Drain-Source Voltage	V_{DS}	650		V
Gate - Source Voltage	V_{GS}	± 30		V
Continuous Drain Current	I_D	7		A
Pulsed Drain Current(note1)	I_{DM}	24		A
Power Dissipation	P_D	28	64	W
Single Pulse Avalanche Energy(note1)	E_{AS}	129		mJ
Operating Temperature Range	T_J	-50 to +150		°C
Storage Temperature Range	T_{STG}	-50 to +150		°C
Thermal Resistance, Junction-to-case	$R_{\theta JC}$	4.8	1.97	°C/W
Thermal Resistance, Junction ambient	$R_{\theta JA}$	62		°C/W

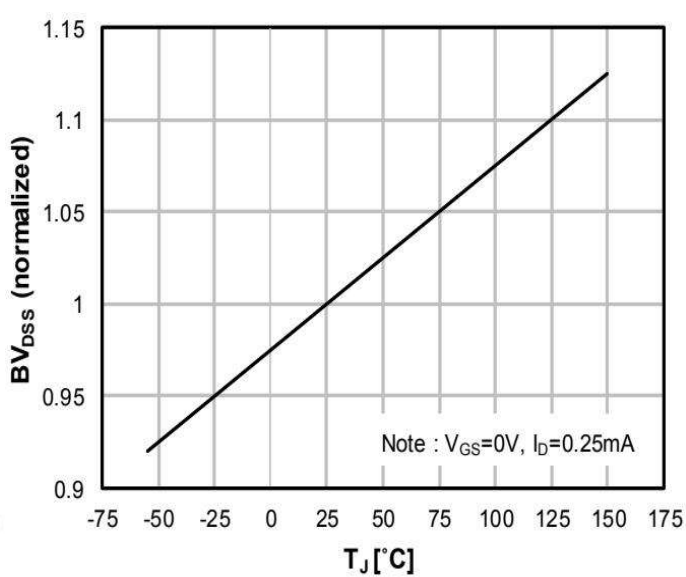
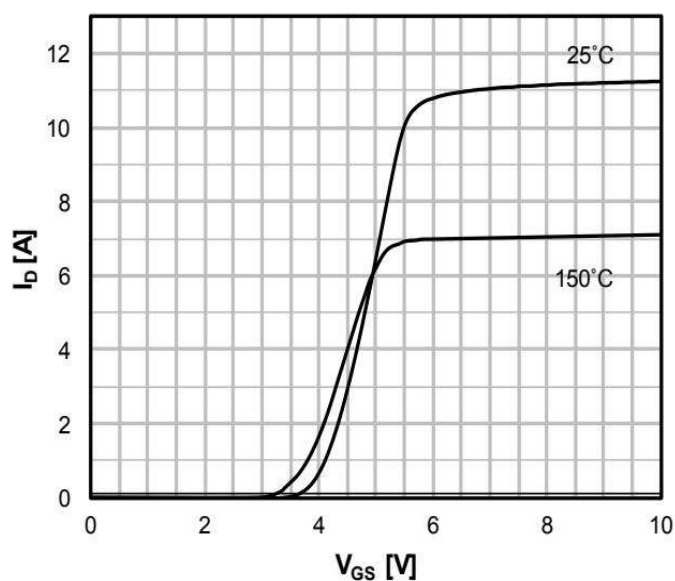
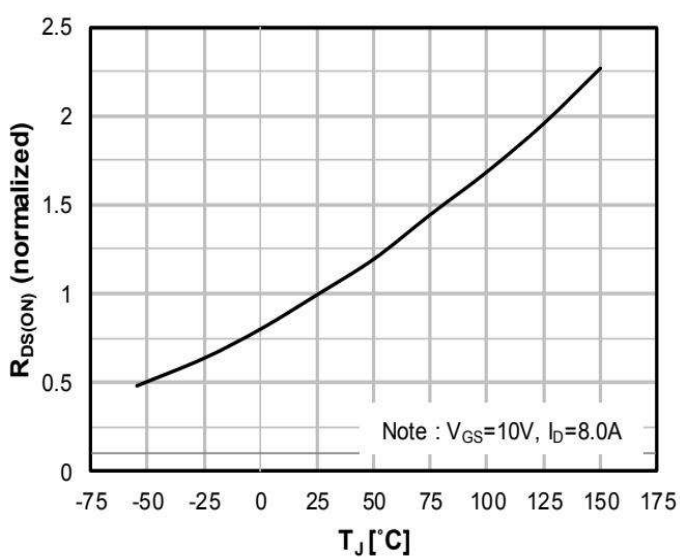
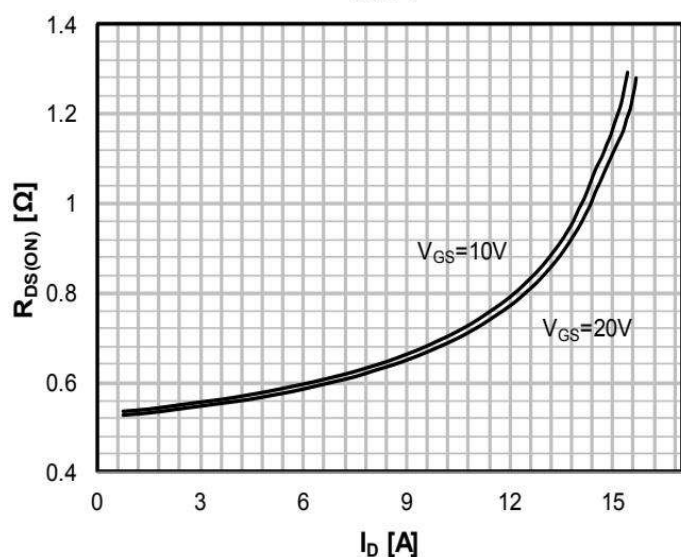
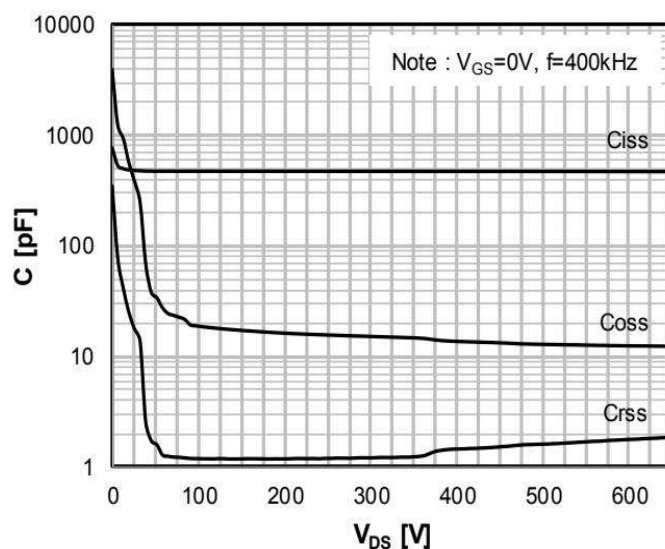
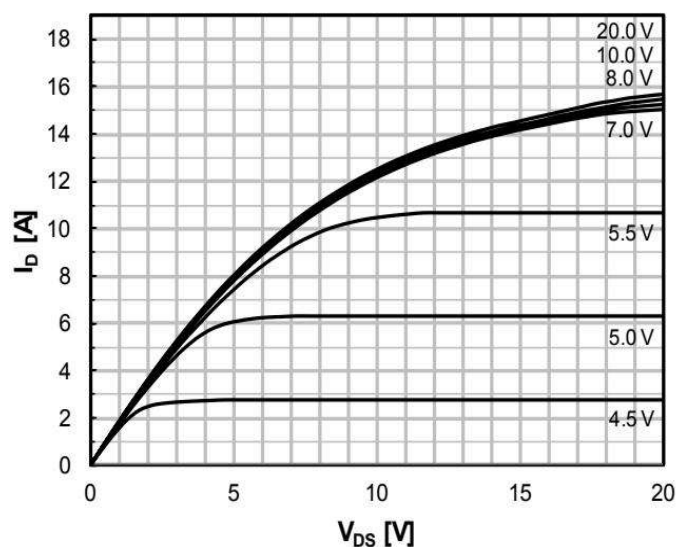
Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

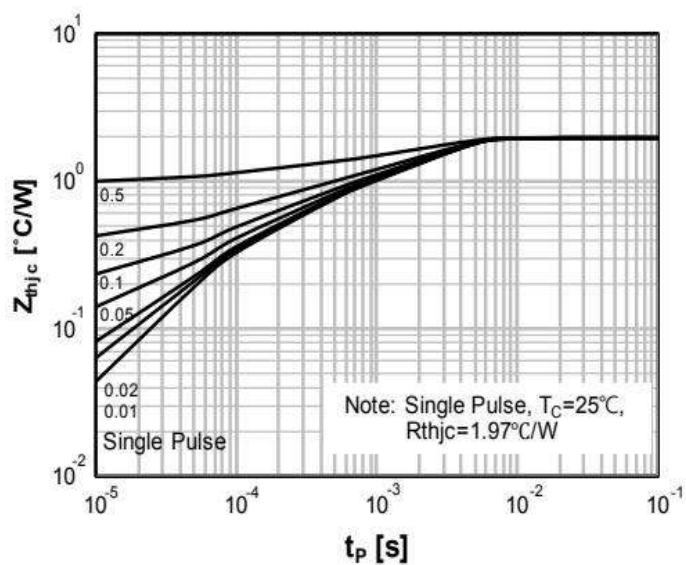
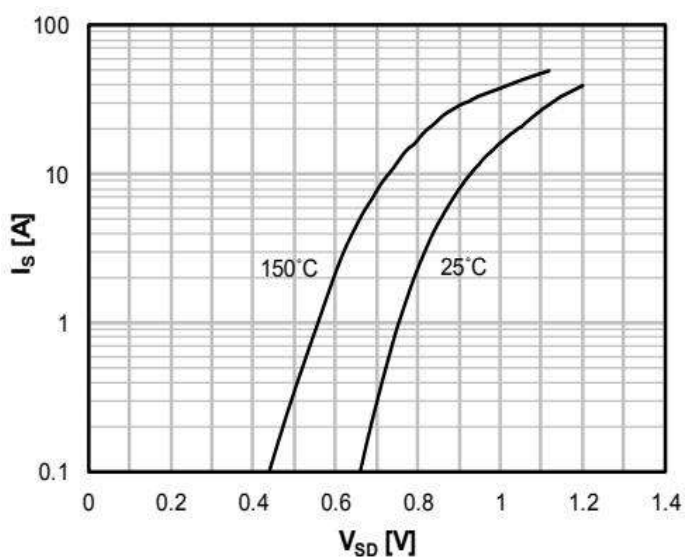
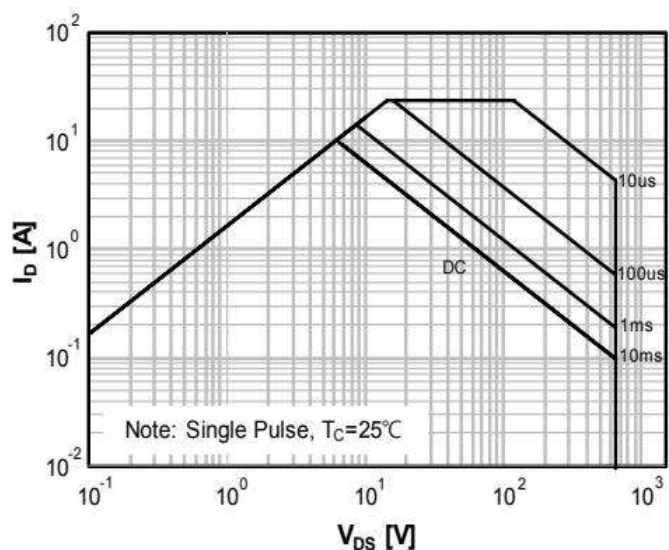
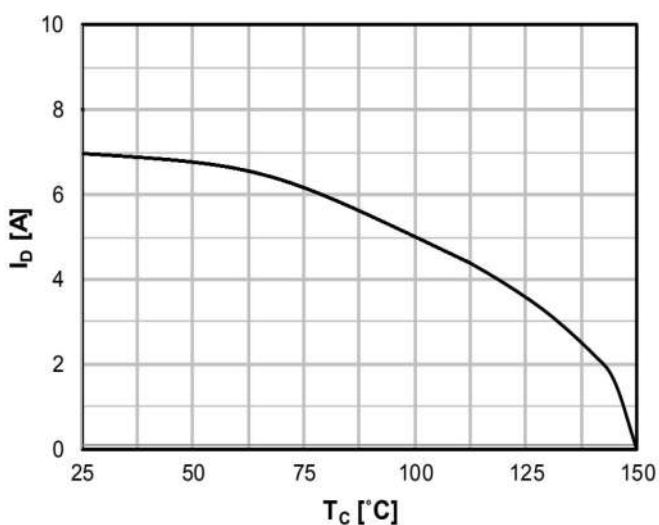
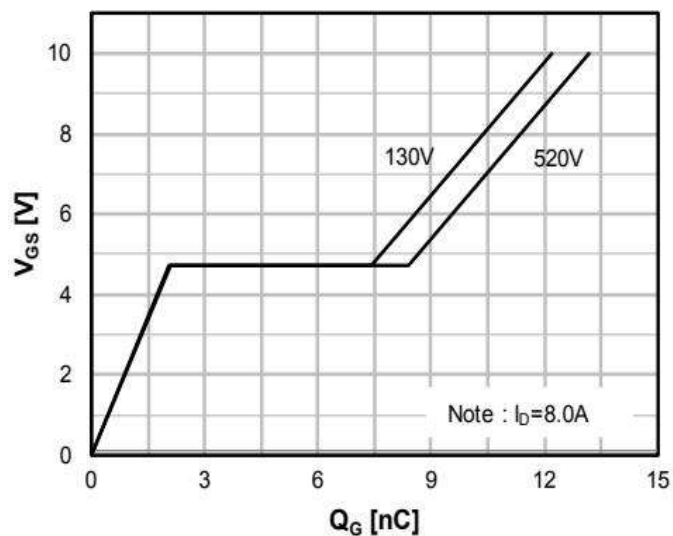
Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS}=650V, V_{GS}=0V$	I_{DSS}	-	-	1	μA
Gate-Source Leakage	$V_{GS}=\pm 30V, V_{DS}=0V$	I_{GSS}	-	-	± 100	nA
Gate- Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On State Resistance	$V_{GS}=10V, I_D=3.5A$	$R_{DS(ON)}$	-	530	600	m Ω
Forward Transconductance	$V_{DS}=5V, I_D=2A$	g_{fs}	-	-	8	S
Input Capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}	-	471	-	PF
Output Capacitance		C_{oss}	-	35	-	
Reverse Transfer Capacitance		C_{rss}	-	1.7	-	
Turn-on delay time(note2)	$V_{DD}=325V$ $V_{GS}=10V$ $R_G=25\Omega$ $I_D=7A$	$t_{d(on)}$	-	17	-	nS
Rise Time(note2)		T_r	-	26	-	
Turn-Off Delay Time(note2)		$t_{d(OFF)}$	-	53	-	
Fall Time(note2)		t_f	-	38	-	
Total Gate Charge(note2)	$V_{DS}=520V$ $V_{GS}=10V$ $I_D=7A$	Q_g	-	13	-	nC
Gate-to Source Charge(note2)		Q_{gs}	-	2.1	-	
Gate-Drain Charge(note2)		Q_{gd}	-	6.9	-	
Maximun Body-Diode Continuous Current		I_S	-	-	7	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	24	A
Drain-Source Diode Forward Voltage	$T_J=25^\circ C, I_S=3.5A, V_{GS}=0V$	V_{SD}	-	-	1.4	V

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

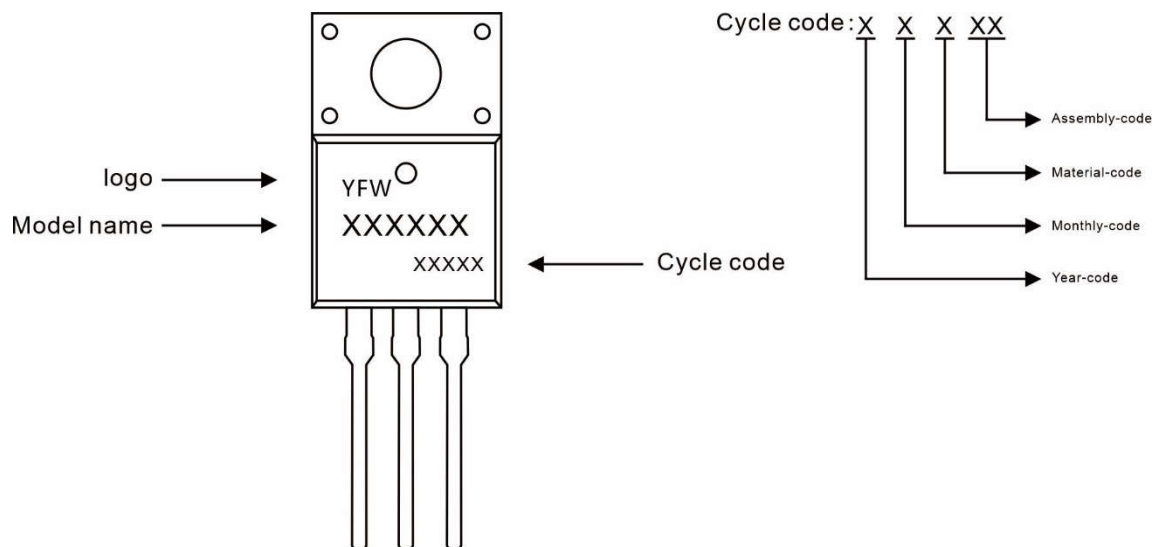
Ratings and Characteristic Curves



Package Outline Dimensions Millimeters



Marking Diagram



Ordering information

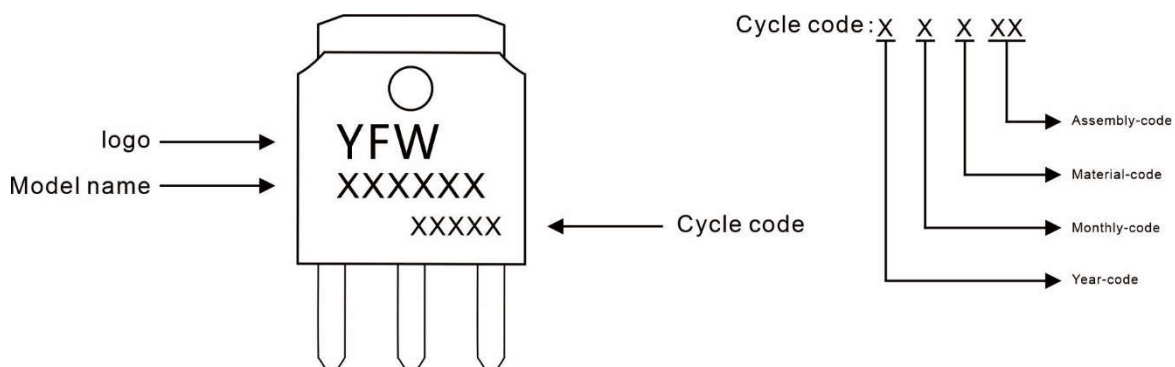
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R600AF	TO-220F	0.06oz(1.74g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220F

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.66	2.86	0.105	0.113
b	0.75	0.85	0.030	0.033
b1	1.24	1.44	0.049	0.057
c	0.40	0.60	0.016	0.024
D	10.00	10.32	0.394	0.406
E	15.75	16.05	0.620	0.632
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	3.10	3.5	0.122	0.138
L	13.50	13.90	0.531	0.547
L1	2.90	3.30	0.114	0.130
Φ	3.10	3.30	0.122	0.130

Marking Diagram



Ordering information

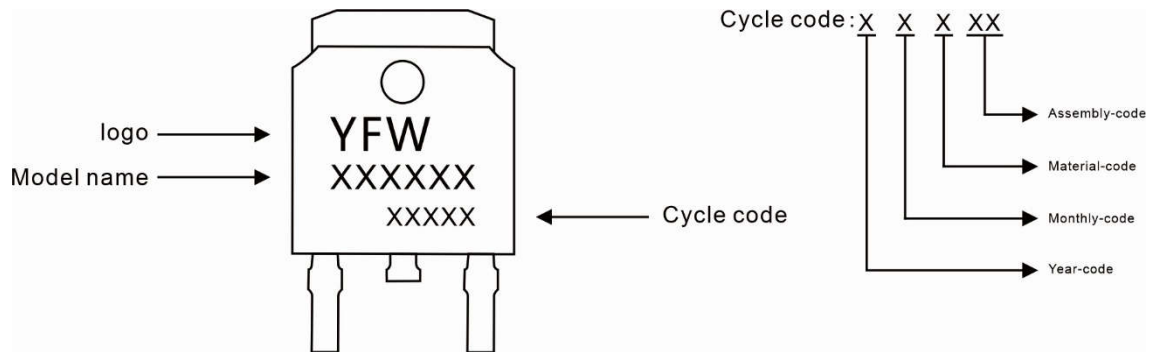
Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R600AMJ	TO-251S	0.011oz(0.32g)	80pcs/tube	4000pcs/box 24000pcs/Carton

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

Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW65R600AD	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

Disclaimer

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