

650V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	650V
R_{DS(on)-typ(@V_{GS}=10V)}	< 1.05Ω (Type: 0.872Ω)

FEATURES

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

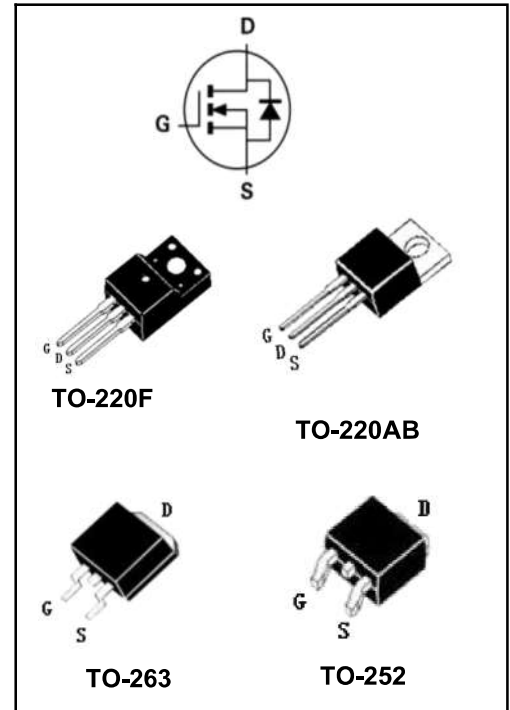
- Power switch circuit of adaptor and charger.

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

Product Specification Classification

Part Number	Package	Marking	Pack
YFW10N65AT	TO-220AB	YFW 10N65AT XXXXX	1000PCS/box
YFW10N65AF	TO-220F	YFW 10N65AF XXXXX	1000PCS/box
YFW10N65AS	TO-263	YFW 10N65AS XXXXX	1000PCS/box
YFW10N65AS-R	TO-263	YFW 10N65AS XXXXX	800PCS /Tape
YFW10N65AD	TO-252	YFW 10N65AD XXXXX	2500PCS/Tape



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value			Unit
		220AB/263	220F	252	
Drain-Source Voltage	V_{DS}	650			V
Gate-Source Voltage	V_{GS}	±30			V
Continue Drain Current	I_D	10			A
Pulsed Drain Current (Note1)	I_{DM}	40			A
Power Dissipation	P_D	130	39	130	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	500			mJ
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150			°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.9	3.2	0.9	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	100	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

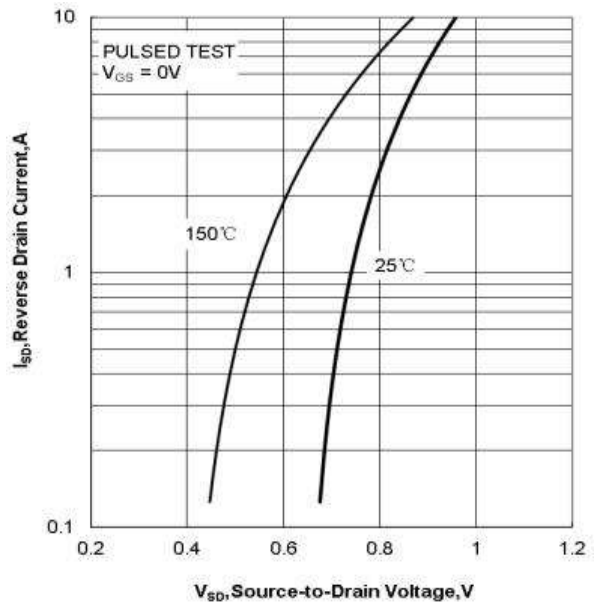
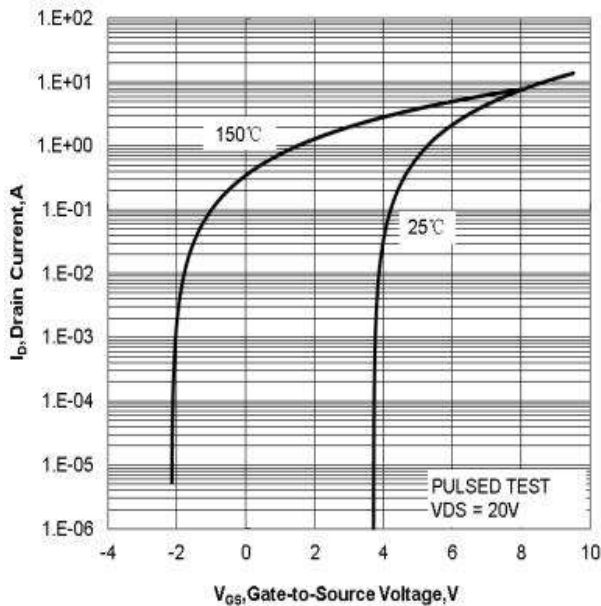
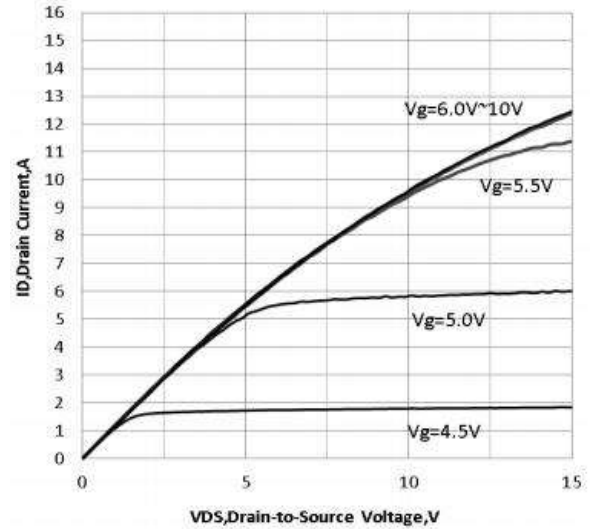
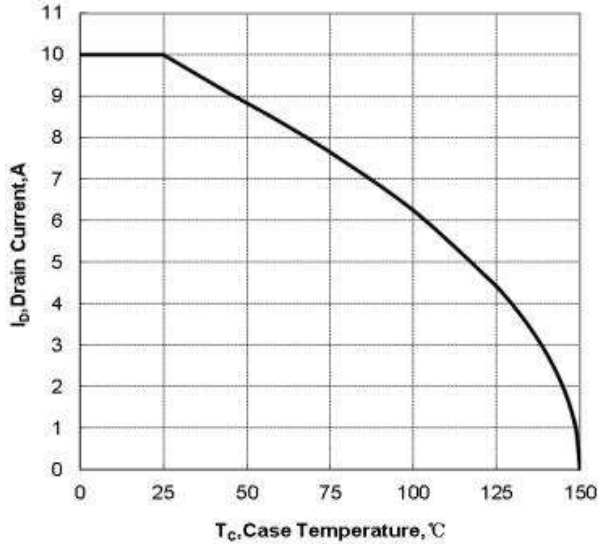
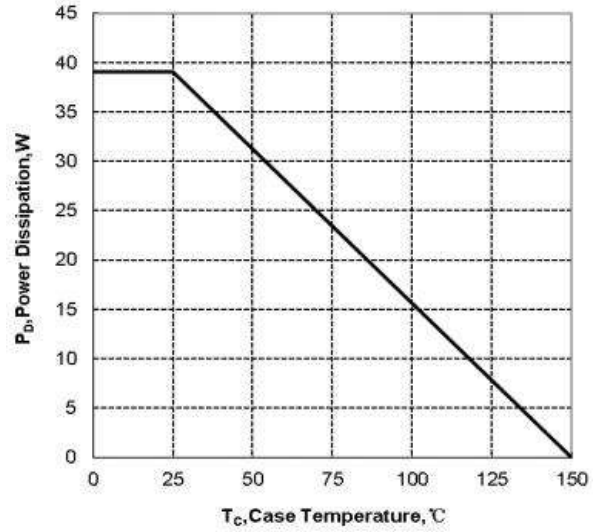
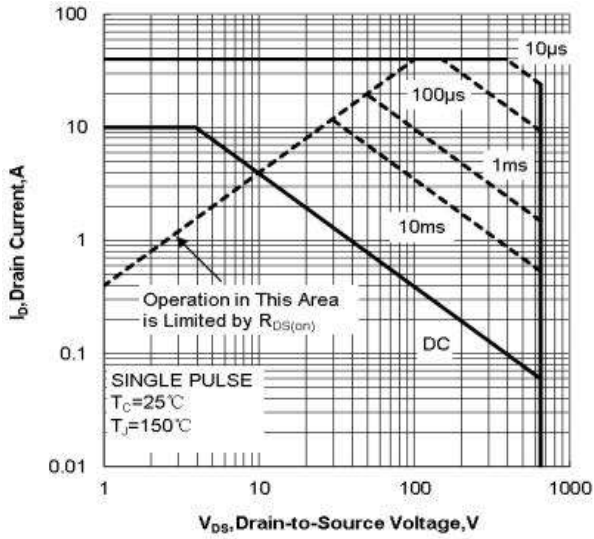
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	650	680	-	V
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 5 A$	$R_{DS(on)}$	-	0.872	1.05	Ω
Forward Transconductance	$V_{DS} = 15 V, I_D = 5 A$	g_{fs}	-	9.5	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V,$ $f = 1 MHz$	C_{iss}	-	1549	-	pF
Output Capacitance		C_{oss}	-	105	-	pF
Reverse Transfer Capacitance		C_{rss}	-	5.1	-	pF
Turn-on Delay Time(Note2)	$I_D = 10 A, V_{DD} = 325 V,$ $R_G = 10 \Omega$	$t_{d(ON)}$	-	21	-	ns
Rise Time(Note2)		t_r	-	26	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	39	-	ns
Fall Time(Note2)		t_f	-	25	-	ns
Total Gate Charge(Note2)	$I_D = 10 A, V_{DD} = 520 V, V_{GS}$ $= 10 V$	Q_G	-	32	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	8	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	12	-	nC

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

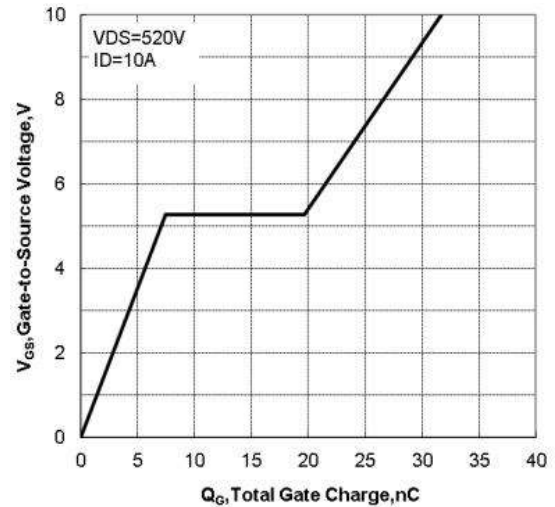
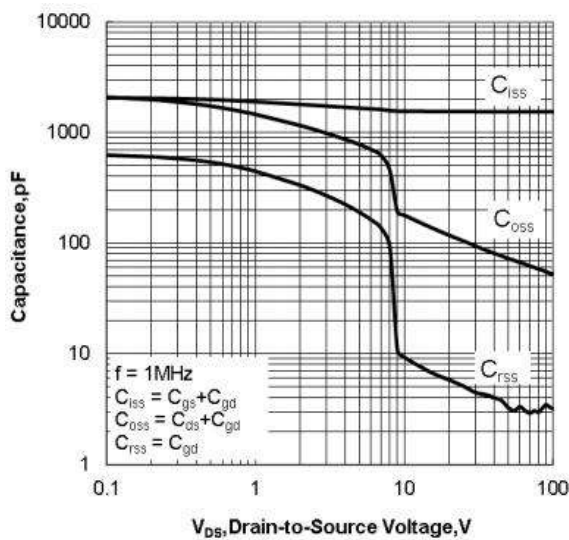
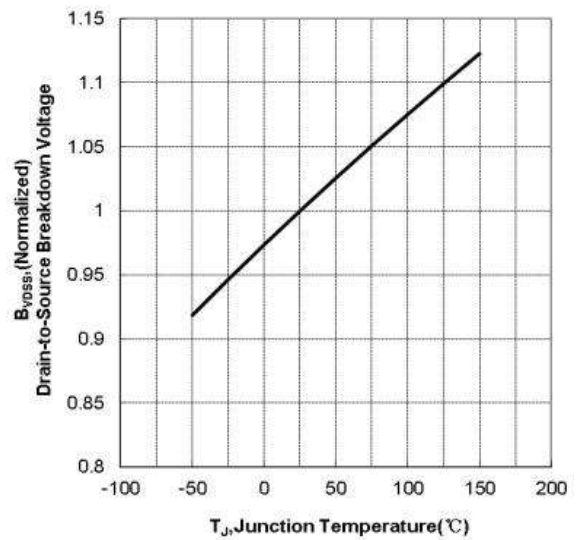
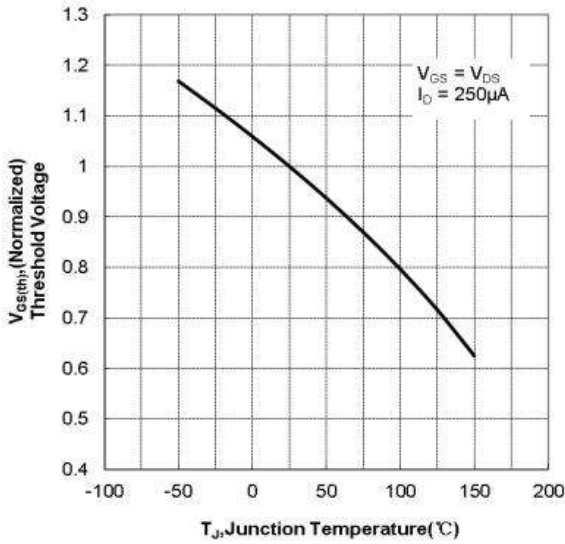
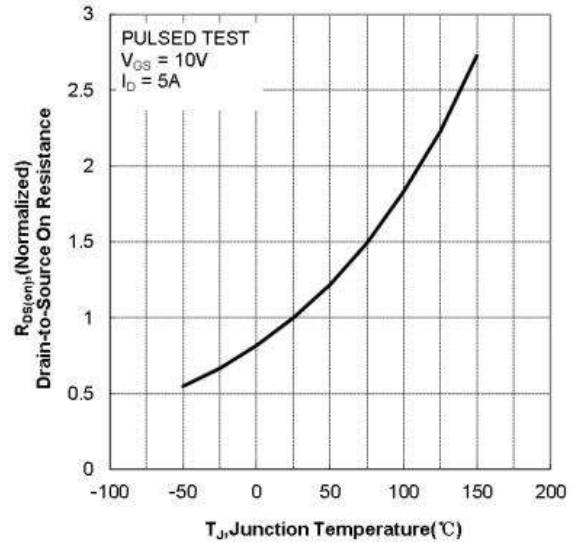
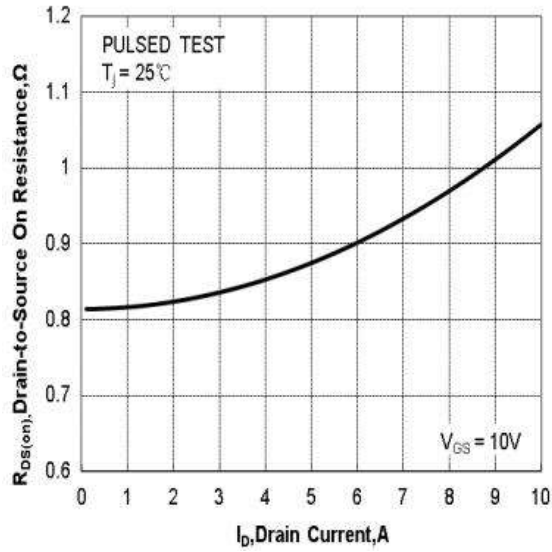
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current	$T_j = 25^\circ C$	I_S	-	-	10	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	40	A
Drain-Source Diode Forward Voltage	$I_{SD} = 10 A$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 10 A, V_{GS} = 0 V,$ $dl_F / dt = 100 A/\mu s$	t_{rr}	-	1070	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	8950	-	nC

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

RATINGS AND CHARACTERISTIC CURVES

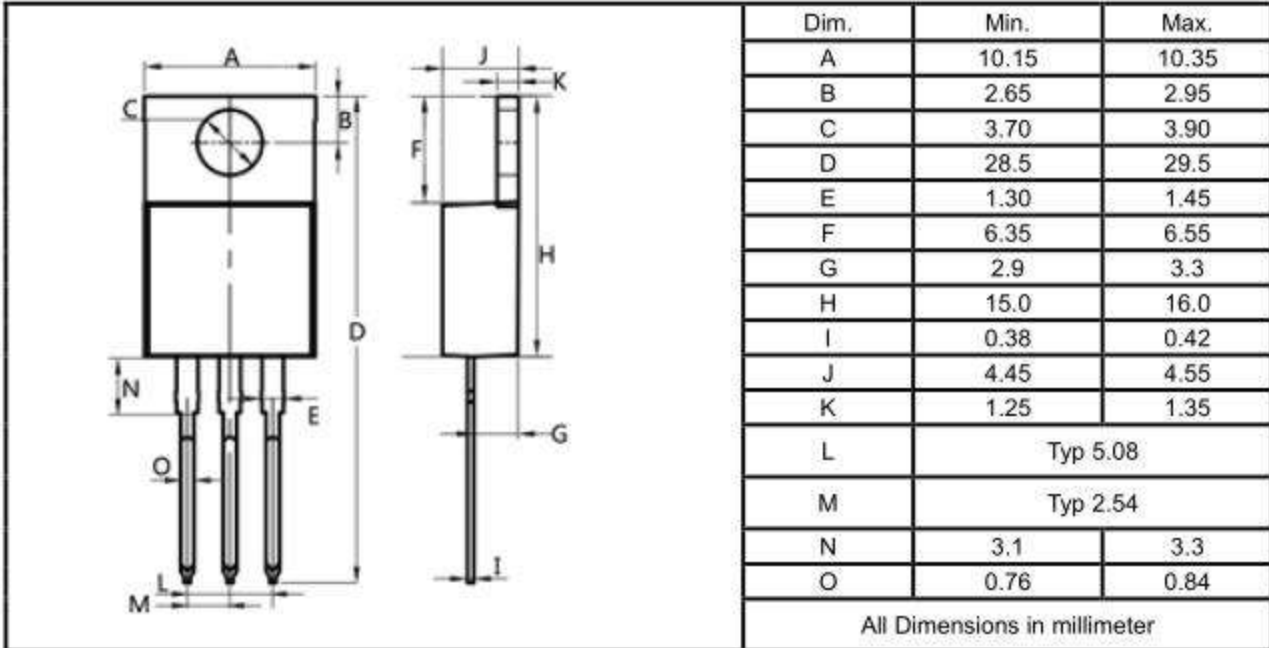


Ratings and Characteristic Curves

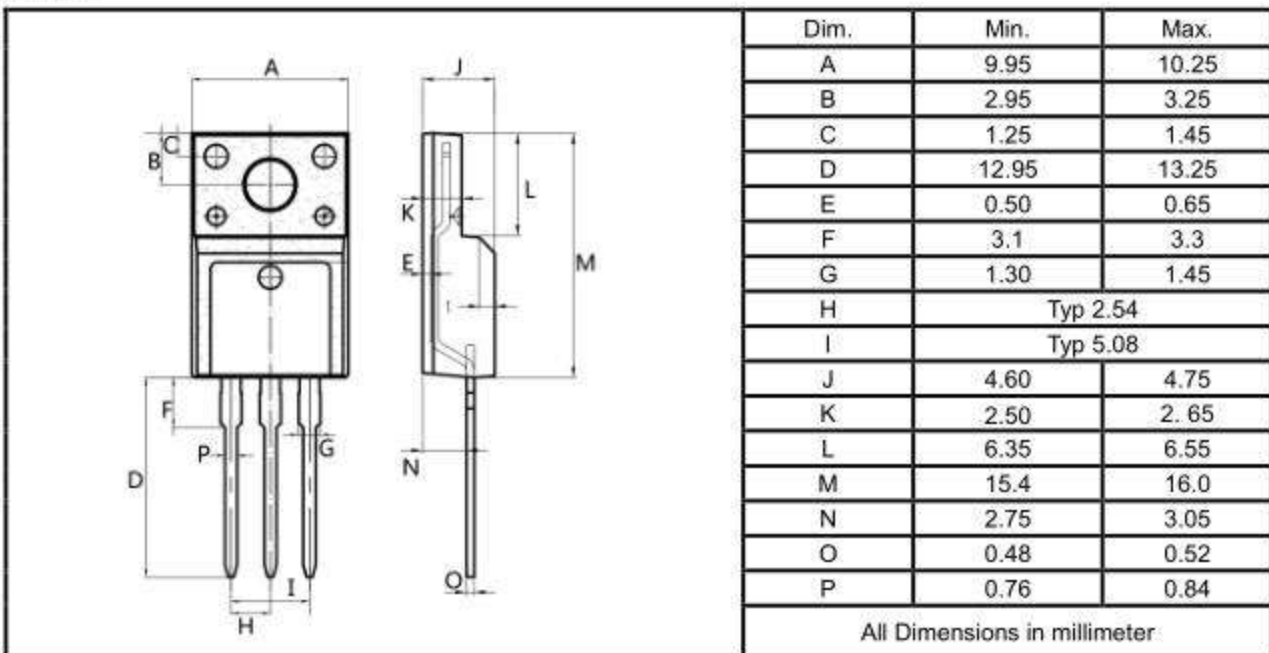


Package Outline Dimensions Millimeters

TO-220AB

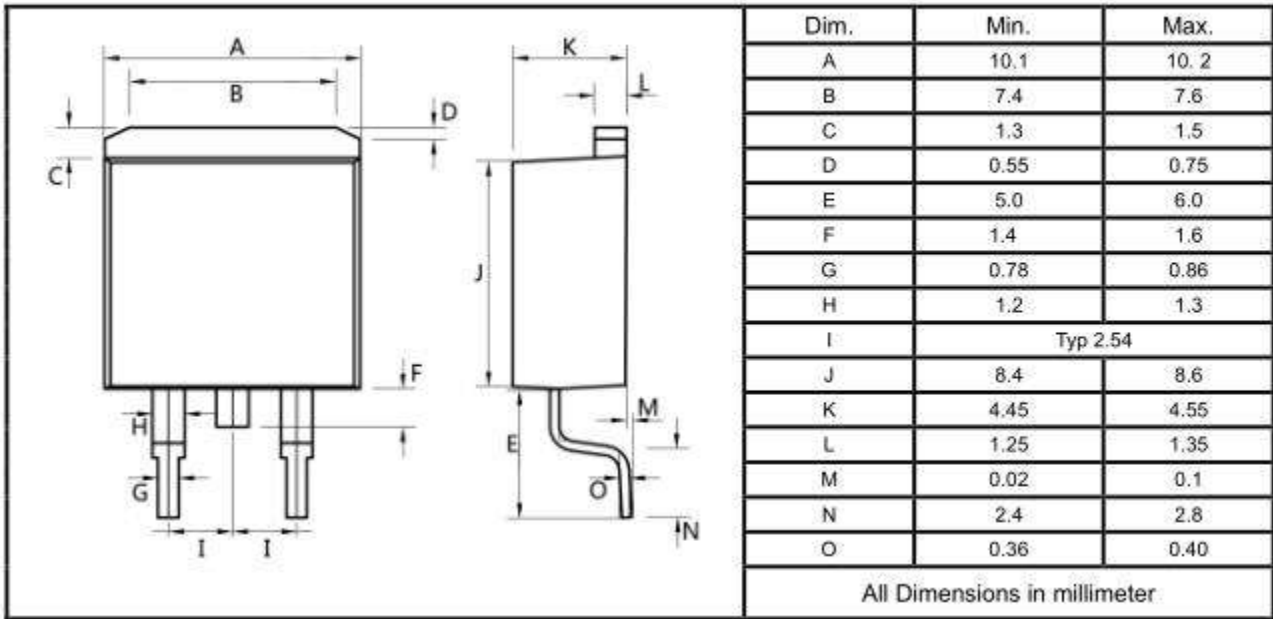


TO-220F

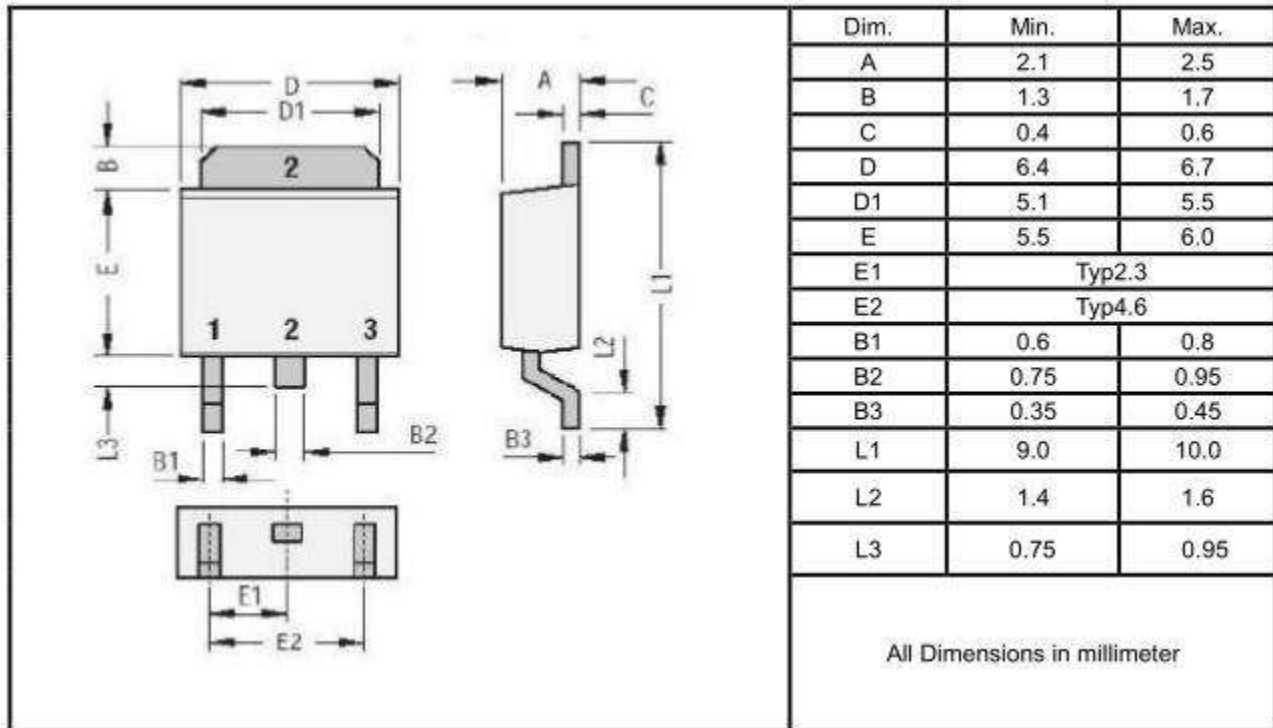


Package Outline Dimensions Millimeters

TO-263



TO-252



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