

700V N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	700V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	<0.95Ω (Type:0.79Ω)

Features

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

APPLICATIONS

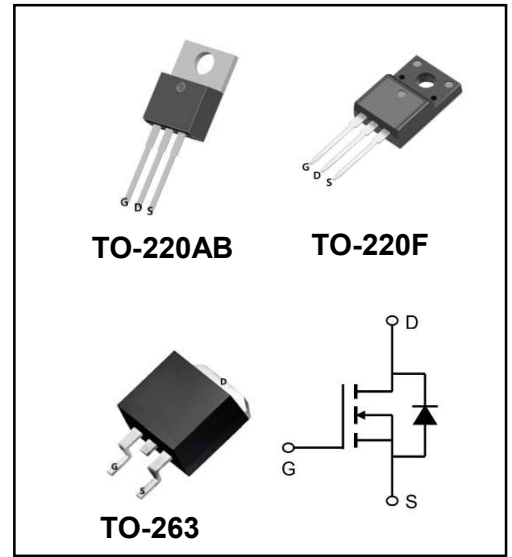
- † power switch circuit of adaptor and charger

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 JESD22-106

Product Specification Classification

Part Number	Package	Marking	Pack
YFW12N70AT	TO-220AB	YFW 12N70AT XXXXX	1000pcs/box
YFW12N70AF	TO-220F	YFW 12N70AF XXXXX	1000pcs/box
YFW12N70AS	TO-263	YFW12N70AS XXXXX	800pcs/Reel



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value		Unit
		220AB/263	220F	
Drain-Source Voltage	V_{DS}	700		V
Gate-Source Voltage	V_{GS}	±30		V
Continue Drain Current	I_D	12		A
Pulsed Drain Current (Note1)	I_{DM}	48		A
Power Dissipation	P_D	110	42	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	580		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta_{JC}}$	1.1	4.2	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta_{JA}}$	62.5	62.5	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

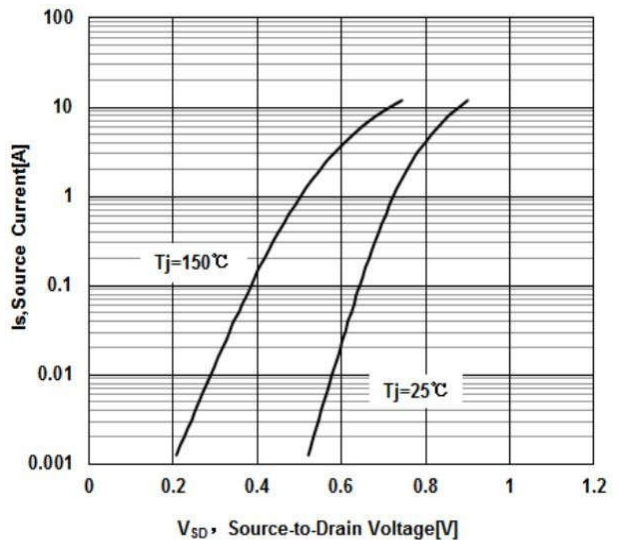
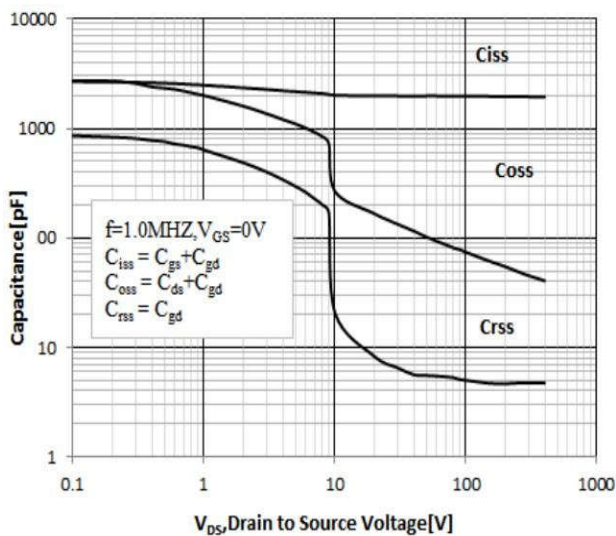
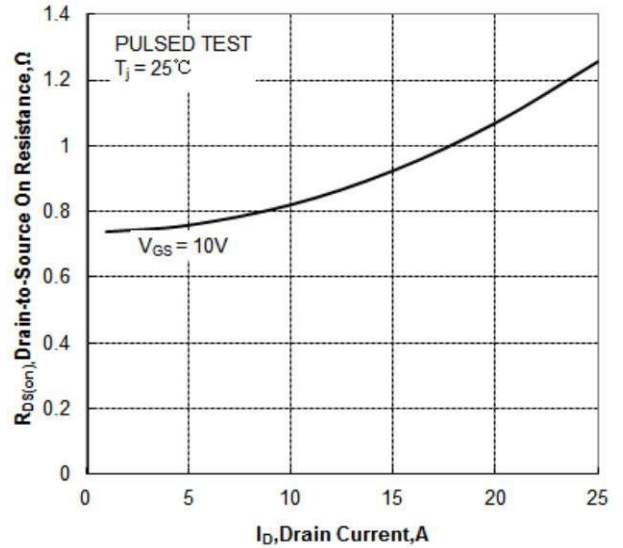
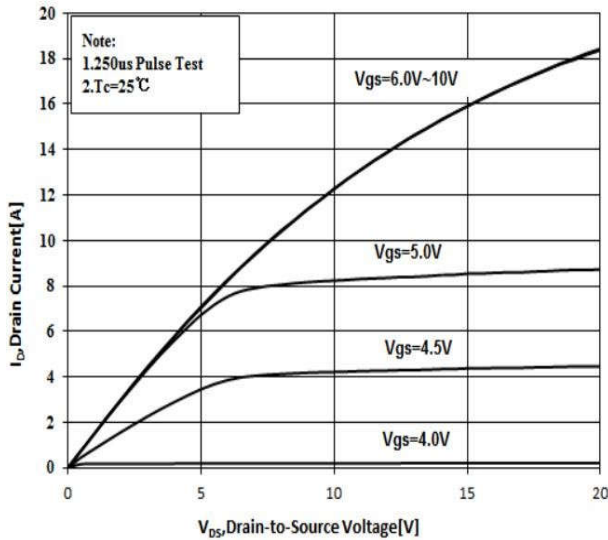
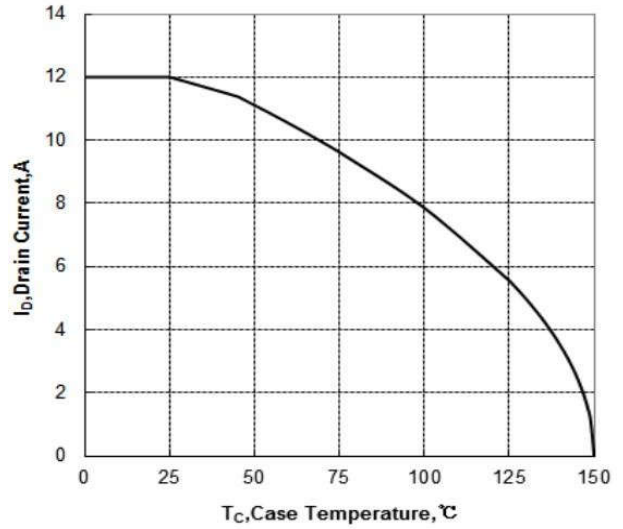
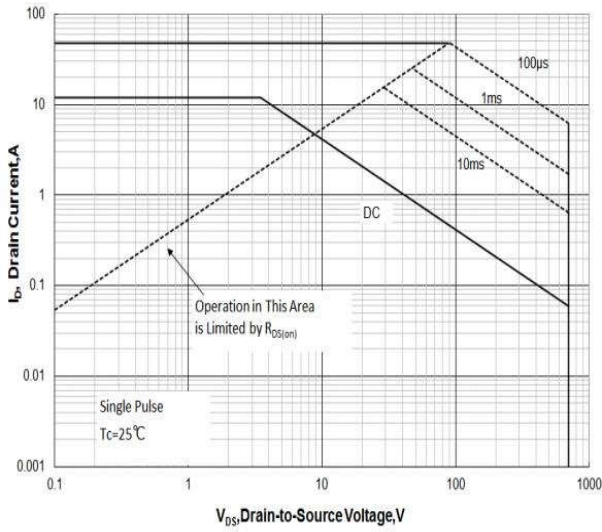
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	700	-	-	V
Drain-Source Leakage Current	$V_{DS} = 700 V, V_{GS} = 0 V$	I_{DSS}	-	-	0.1	μA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	±80	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 6 A$	$R_{DS(on)}$	-	0.79	0.95	Ω
Forward Transconductance	$V_{DS} = 15 V, I_D = 6 A$	gfs	-	12	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V, f = 1.0MHz$	C_{iss}	-	1981	-	pF
Output Capacitance		C_{oss}	-	146.9	-	pF
Reverse Transfer Capacitance		C_{riss}	-	6.9	-	pF
Turn-on Delay Time(Note2)	$I_D = 12 A, V_{DD} = 350 V, R_G = 10 \Omega$	$t_{d(ON)}$	-	28	-	ns
Rise Time(Note2)		t_r	-	26	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	64	-	ns
Fall Time(Note2)		t_f	-	45	-	ns
Total Gate Charge(Note2)	$I_D = 12 A, V_{DD} = 560 V, V_{GS} = 10 V$	Q_G	-	38.6	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	9.2	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	16	-	nC

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

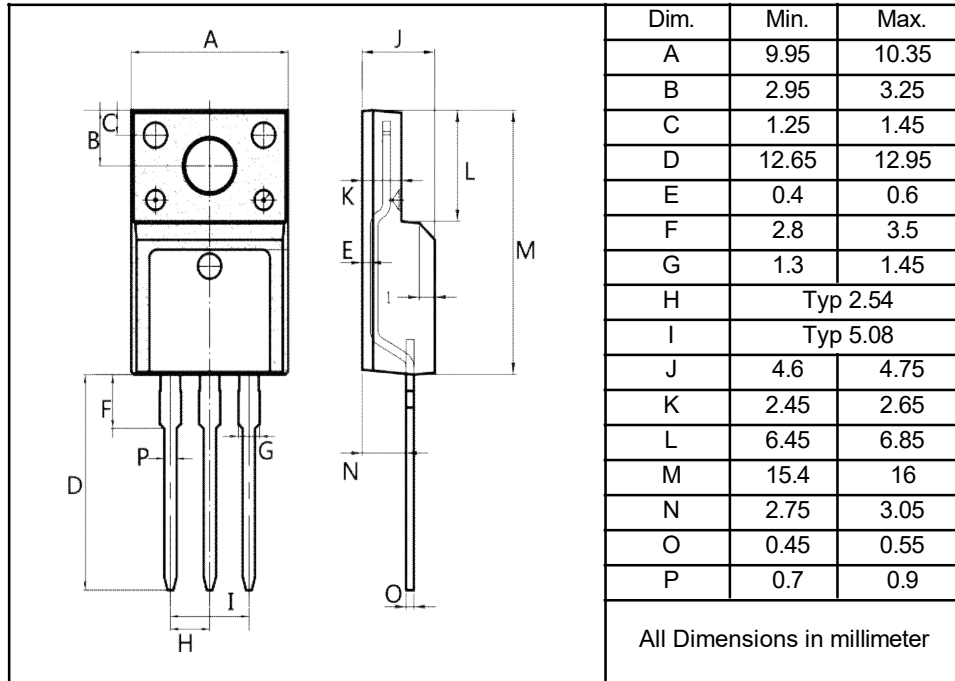
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	12	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	$I_{SD} = 12 A$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 12 A, V_{GS} = 0 V, di_F / dt = 100 A/\mu s$	trr	-	536	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	4693	-	μC

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

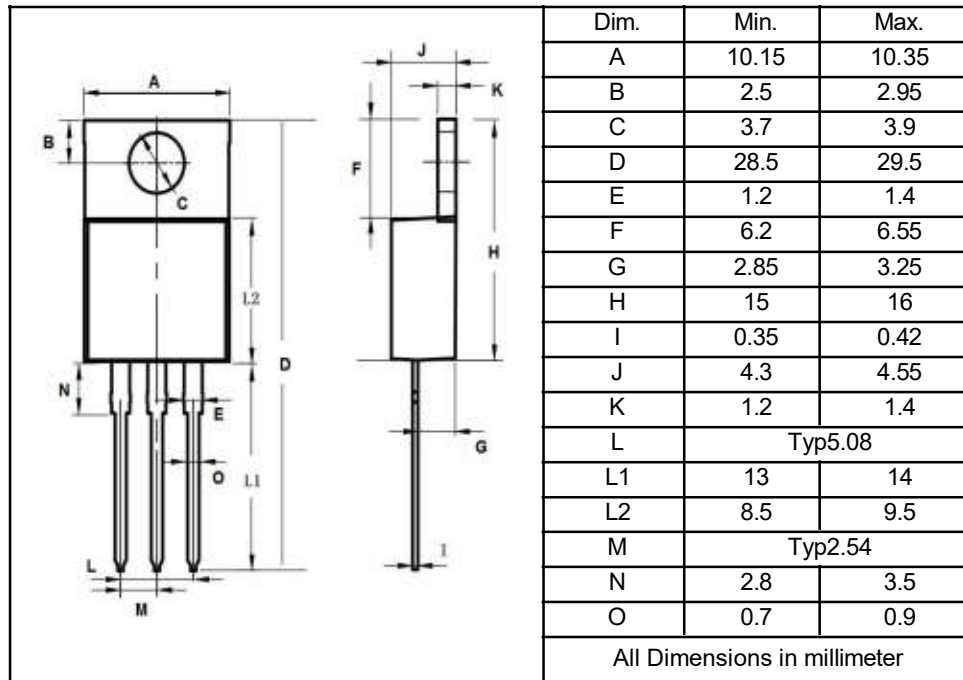
RATINGS AND CHARACTERISTIC CURVES



TO-220F



TO-220AB



Package Outline Dimensions Millimeters

TO-263

