N-CHANNEL POWER MOSFET

Features

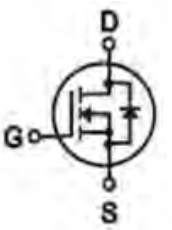
- LOW THERMAL RESISTANCE
- FAST SWITCHING
- HIGH INPUT RESISTANCE
- RoHS COMPLIANT

Applications

- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

●Absolute Maximum Ratings（Tc=25°C） TO-220/220FP/263

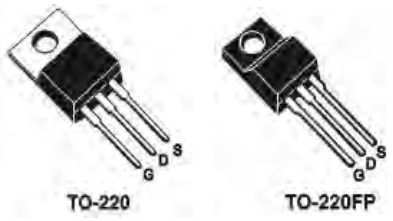
PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V_{DS}	800	V
gate-source Voltage	V_{GS}	± 30	V
Continuous Drain Current (TC=25℃)	I_D	7.0	A
Continuous Drain Current (TC=100℃)	I_D	4.2	A
Drain Current －Pulsed ①	I_{DM}	28	A
Power Dissipation	P_{tot}	TO-220:167 TO-220FP:48 TO-263:147	W
Junction Temperature	Tj	150	℃
Storage Temperature	T_{STG}	-55-150	℃
Single Pulse Avalanche Energy ②	E_{AS}	340	mJ



V_{DS}=800V

$R_{DS(ON)}$=1.2Ω

I_D=7.0A



TO-263(D^2PAK)

●Electronic Characteristics (Tc=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	800			V
Breakdown Voltage Temperature Coefficient	Δ BV_{DSS}/ Δ Tj	I_D=250uA, Referenced to 25°C		0.65		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	2.0		4.0	V
Drain-source Leakage Current	I_{DSS}	V_{DS} =800V, V_{GS} =0V, Tj=25°C			1	μA
		V_{DS} =640V, V_{GS} =0V, Tj=125°C			10	μA
Forward Transconductance	gfs	V_{DS} =15V, I_D=3.5A ③		7.0		S

● Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gate-body Leakage Current (V_{DS} = 0)	I_{GSS}	V_{GS} =±30V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=3.5A ③		1.2	1.7	Ω
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ	1000	1290	1600	pF
Output Capacitance	Coss		90	120	150	
Reverse transfer Capacitance	Crss		15	21	25	
Turn-on Delay Time	Td(on)	V_{DD}=400V, I_D =7.0A R_G=25Ω ③		26		ns
Rise Time	Tr			23		
Turn -Off Delay Time	Td(off)			66		
Fall Time	Tf			20		
Total Gate Charge	Qg	I_D =7.0A, V_{DS} = 400V V_{GS} = 10V ③	19	24	29	nC
Gate-to-Source Charge	Qgs		4.5	6.1	11	nC
Gate-to-Drain Charge	Qgd		6.1	7.7	9.3	nC
Continuous Diode Forward Current	I_S				7.0	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=7.0A V_{GS} =0V ③			1.4	V
Reverse Recovery Time	trr	Tj=25°C,If=7.0A di/dt=100A/μs ③		320		ns
Reverse Recovery Charge	Qrr			2.4		uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX			UNIT
		TO-220	TO-220FP	TO- 263	
Thermal Resistance Junction-case	Rth_{JC}	0.75	2.60	0.85	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62.5	62.5	62.5	℃/W

(Notes):

1. Repetitiverating:Pulsewidthlimitedbymaximumjunctiontemperature
2. StartingTj=25°C,V_{DD}=50V,L=14mH,R_G=25Ω,I_{AS}=7.0A
3. PulseTest:Pulsewidth≤300μs,Dutycycle≤2%

Typical Performance Characteristics

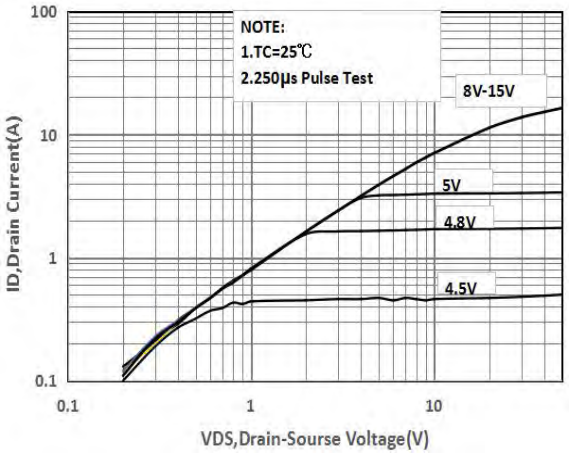


Fig1 Typical Output Characteristics, Tc=25℃

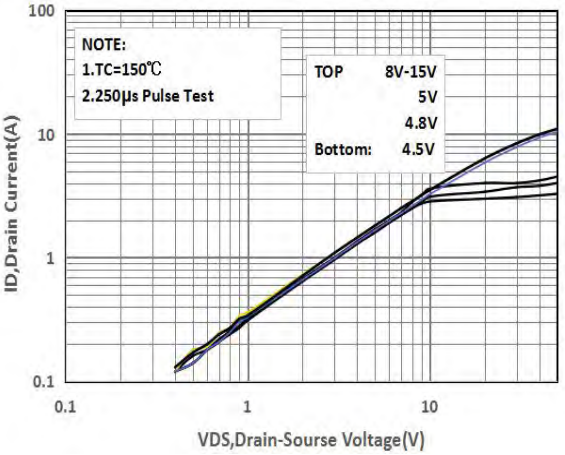


Fig2 Typical Output Characteristics, Tc=150℃

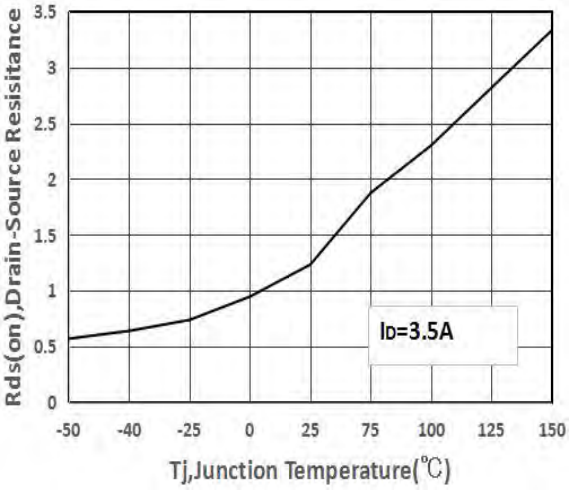


Fig3 Drain-Source On-Resistance Vs.Temperature

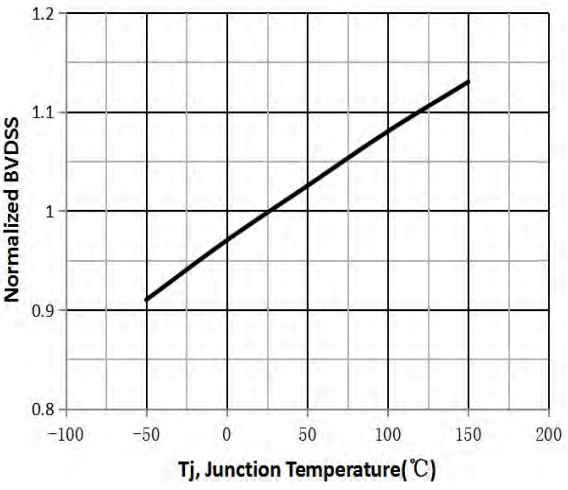


Fig4 BVDSS VS Junction Temperature

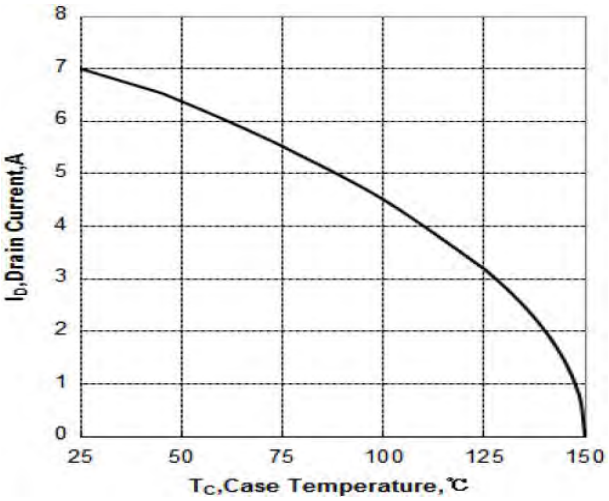


Fig5 Typical Source-Drain Diode Forward Voltage

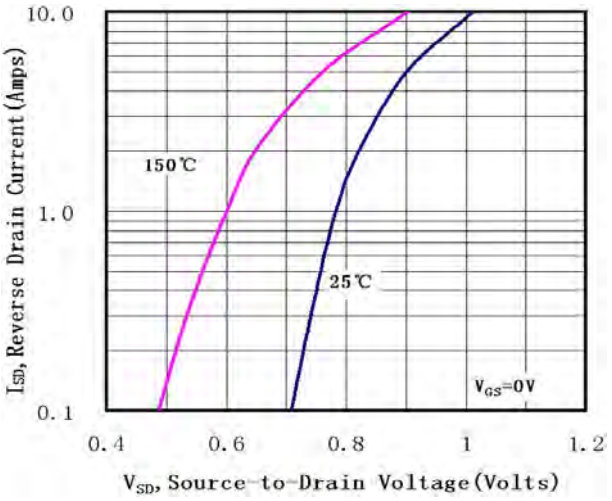


Fig6 Maximum Drain Current Vs.Case Temperature

Typical Performance Characteristics(Con.)

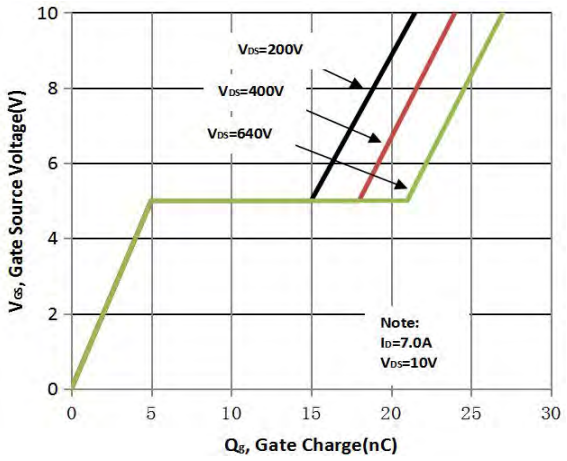


Fig7 Gate Charge Curve

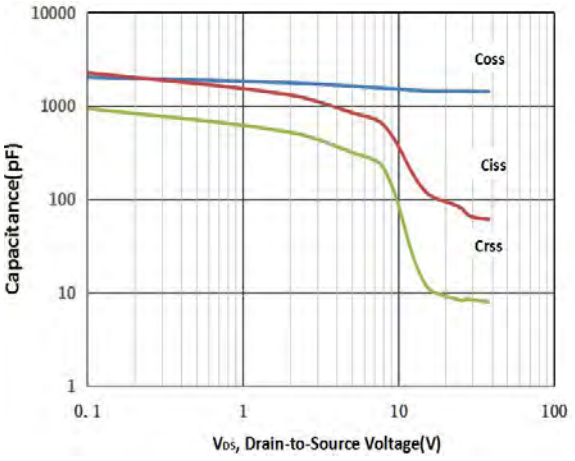


Fig8 Capacitance vs V DSCurve

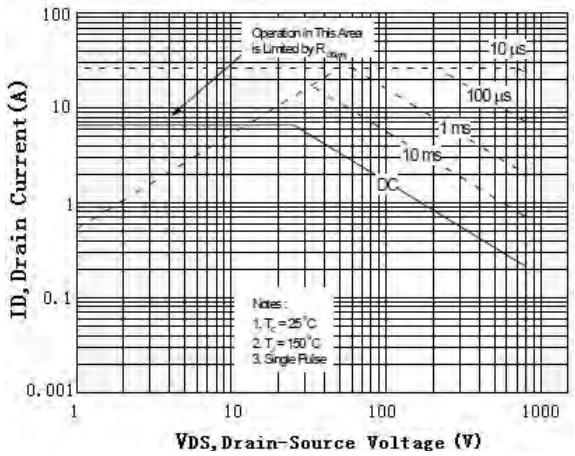


Fig9-1 M aximum Safe Operating A rea

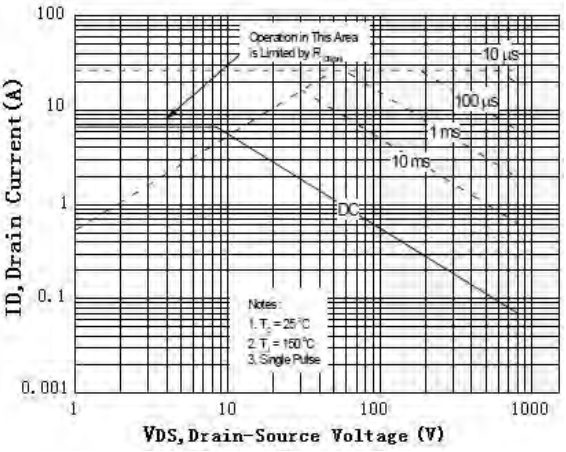


Fig9-2 M aximum Safe Operating A rea

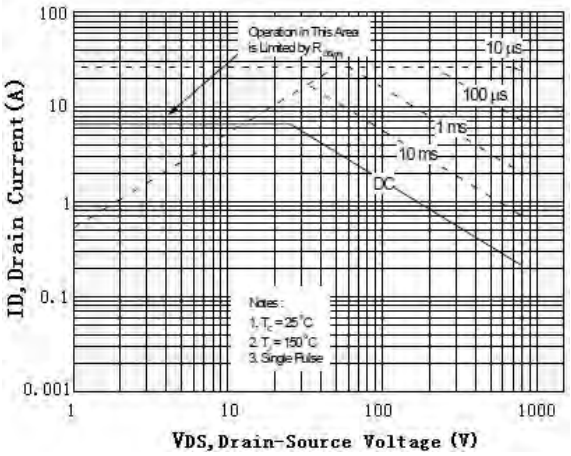
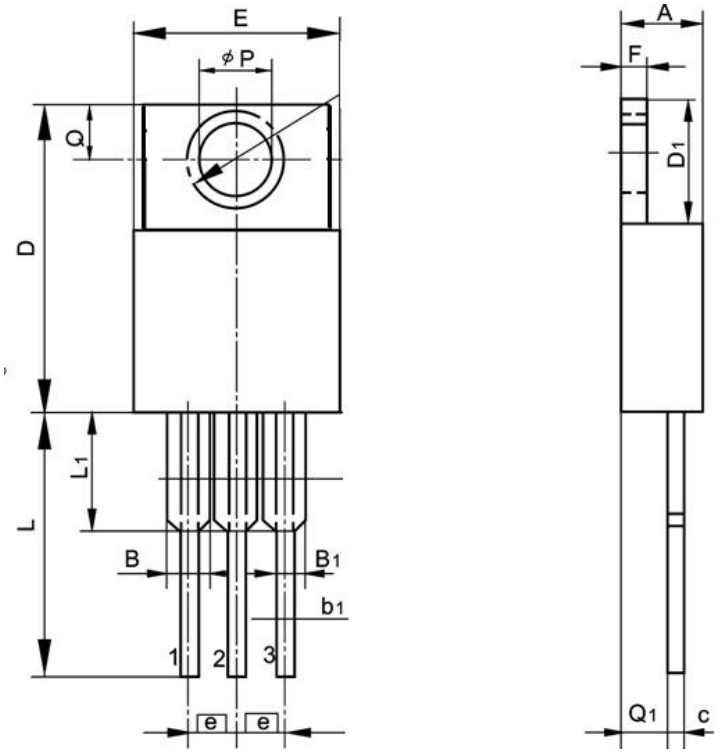


Fig9-3 M aximum Safe Operating A re

TO-220 MECHANICAL DATA

UNIT：mm

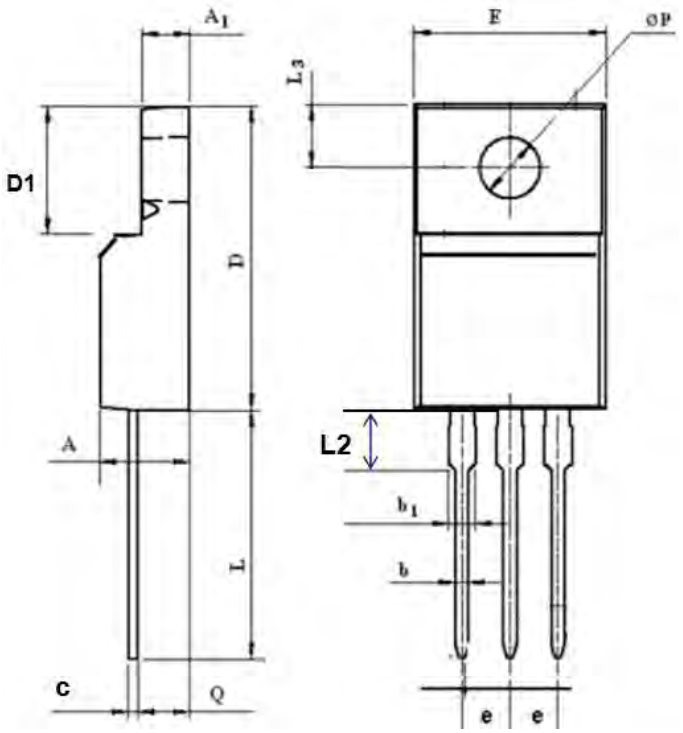
SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.00		4.80	E	9.90		10.70
B	1.20		1.50	e		2.54	
B1	1.00		1.40	F	1.10		1.45
b1	0.65		1.00	L	12.50		14.50
c	0.35		0.75	L1	3.00	3.50	4.00
D	15.00		16.50	Q	2.50		3.00
D1	5.90		6.90	Q1	2.00		3.00
				ϕP	3.60		3.90



TO-220FP MECHANICAL DATA

UNIT：mm

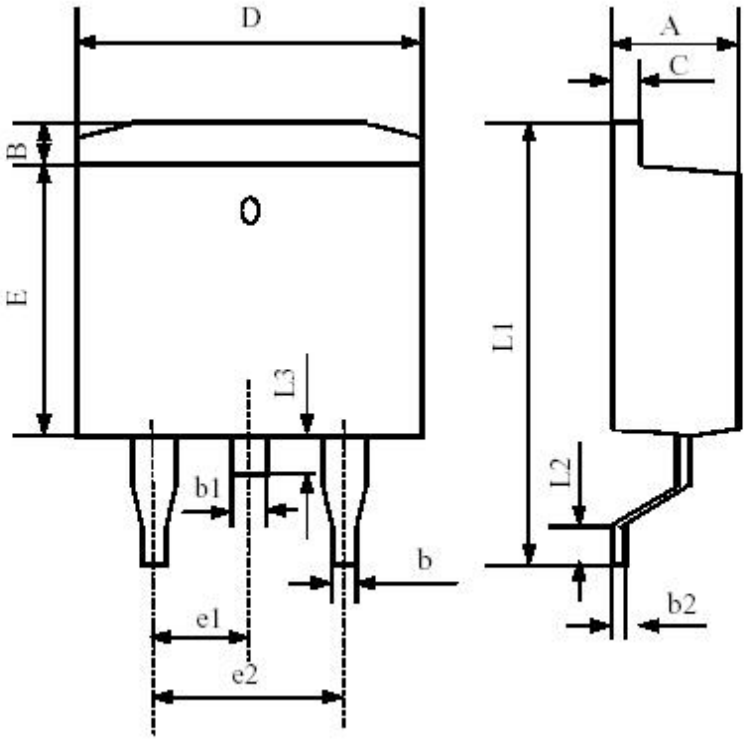
SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.40		4.95	E	9.60		10.30
A_1	2.30		2.90	e		2.54	
b	**0.70**		**0.90**	**L**	**12.40**		**14.00**
b_1	**1.18**		**1.45**	**L_2**	**2.30**		**2.60**
c	**0.40**		**0.70**	L_3	3.00		4.00
D	14.50		17.00	øp	3.00		3.50
D1	6.10		9.00	Q	2.30		2.80



TO-263(D2PAK) MECHANICAL DATA

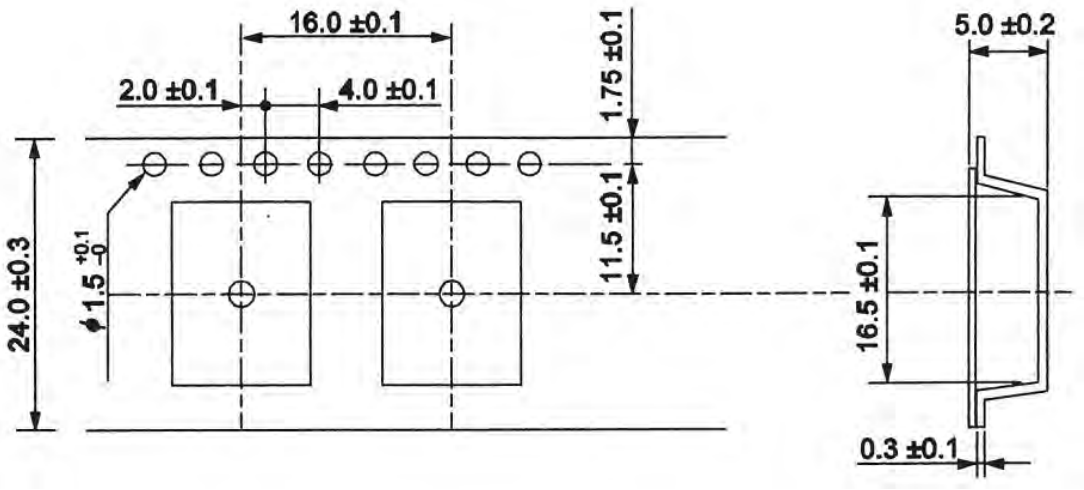
UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.30		1.75
D	9.95		10.25				

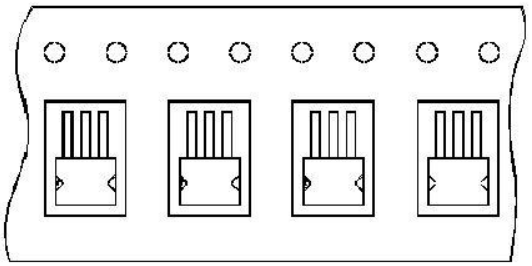


TO-263 TAPE AND REEL DATA

UNIT： mm



USER DIRECTION OF FEED



UNIT ORIENTATION