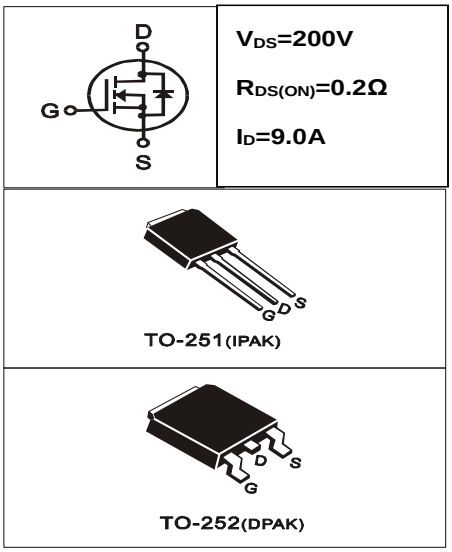
N-CHANNEL POWER MOSFET



Features

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

Applications

- LIGHTING
- UNINTERRUPTED POWER SUPPLY
- SWITCH MODE POWER SUPPLY
- AC-DC CONVERSION CIRCUIT

●Absolute Maximum Ratings（Tc=25℃）

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V_{DS}	200	V
gate-source Voltage	V_{GS}	± 20	V
Continuous Drain Current TC=25℃	I_D	9	A
Continuous Drain Current TC=100℃	I_D	4.5	A
Drain Current －Pulsed ①	I_{DM}	36	A
Power Dissipation	P_{tot}	100	W
Junction Temperature	Tj	150	°C
Storage Temperature	T_{STG}	-55-150	°C
Single Pulse Avalanche Energy ②	E_{AS}	270	mJ

● Electronic Characteristics（Tc=25℃）

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	200			V
Breakdown Voltage Temperature Coefficient	Δ BV_{DSS}/ Δ Tj	I_D=250uA, Referenced to 25°C		0.2		V/°C
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	1.5		2.5	V
Drain-source Leakage Current	I_{DSS}	V_{DS} =200V, V_{GS} =0V, Tj=25 °C			1	μA
		V_{DS} =200V, V_{GS} =0V, Tj=125°C			10	μA
Forward Transconductance	GFS	V_{DS} =10V, I_D=9A ③	5.0	9.5		S

● Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gate-body Leakage Current (V_{DS} = 0)	I_{GSS}	V_{GS} =±20V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =4.5V, I_D=4.0A ③		0.22	0.45	Ω
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D=4.5A ③		0.20	0.40	Ω
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V F = 1.0MHZ		815		pF
Output Capacitance	Coss			120		pF
Miller Capacitance	Crss			25		pF
Turn -Off Delay Time	Td(off)	V_{DD}=100V, I_D =9.0A R_G= 3.5Ω, R_D=25Ω ③		35		ns
Total Gate Charge	Qg	I_D =9.0A, V_{DS} = 160V V_{GS} = 10V ③		16.5		nC
Gate-to-Source Charge	Qgs			2.5		nC
Gate-to-Drain Charge	Qgd			3.8		nC
Continuous Diode Forward Current	I_S				9.0	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=9.0A V_{GS} =0V ③			1.45	V
Reverse Recovery Time	trr	Tj=25°C, If=9.0A di/dt=100A/μs ③			128	ns
Reverse Recovery Charge	Qrr			655		nC

● Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	1.25	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62.5	℃/W

(Notes):

① Repetitive rating: Pulse width limited by maximum junction temperature

② Starting Tj=25ºC, V_{DD} =50V, L=3.0 mH, R_G =25Ω, I_{AS}=9.0A

③ Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Typical Performance Characteristics

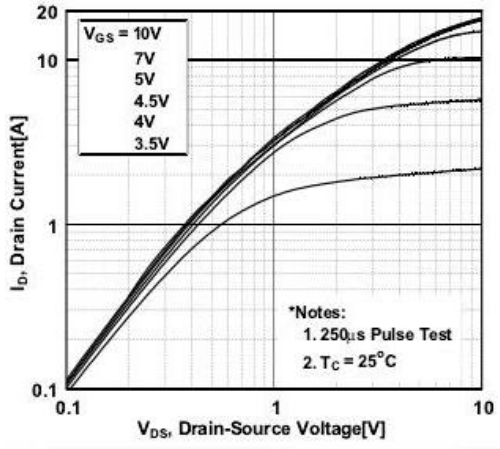


Fig1 Typical Output Characteristics, Tc=25℃

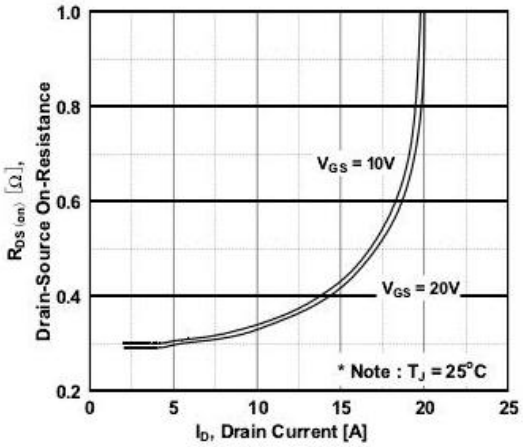


Fig2 On-Resistance Vs.Drain Current and Gate Voltage

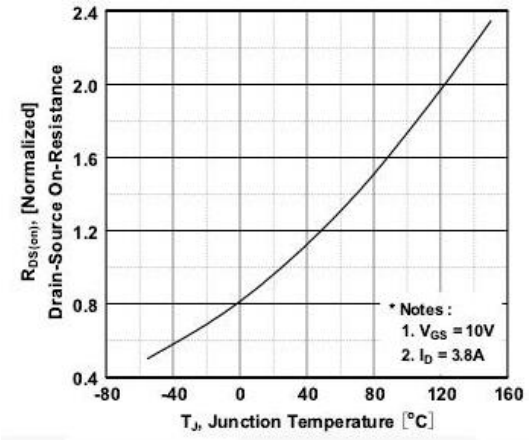


Fig3 Normalized On-Resistance Vs.Temperature

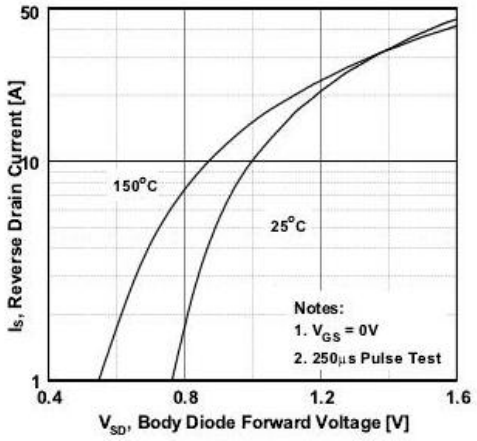


Fig4 Typical Source-Drain Diode Forward Voltage

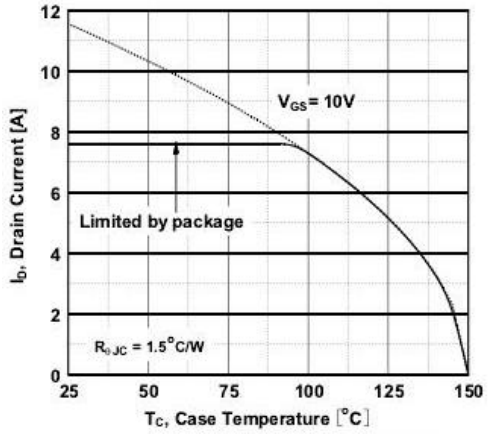


Fig5 Maximum Drain Current Vs.Case Temperature

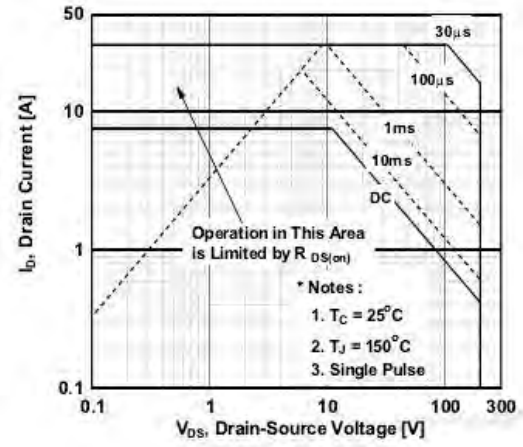
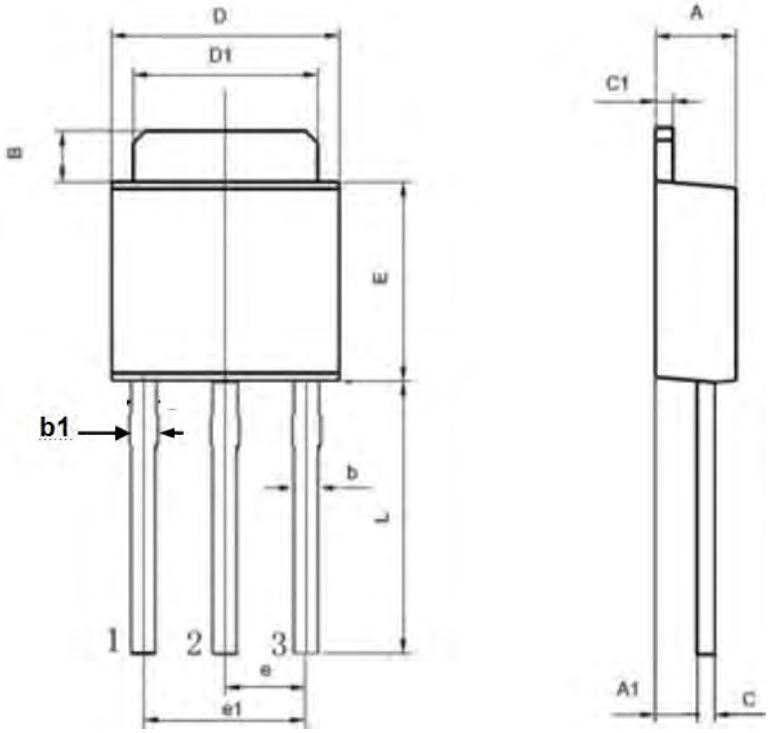


Fig6 Maximum Safe Operating Area

TO-251 (IPAK) MECHANICAL DATA

UNIT：mm

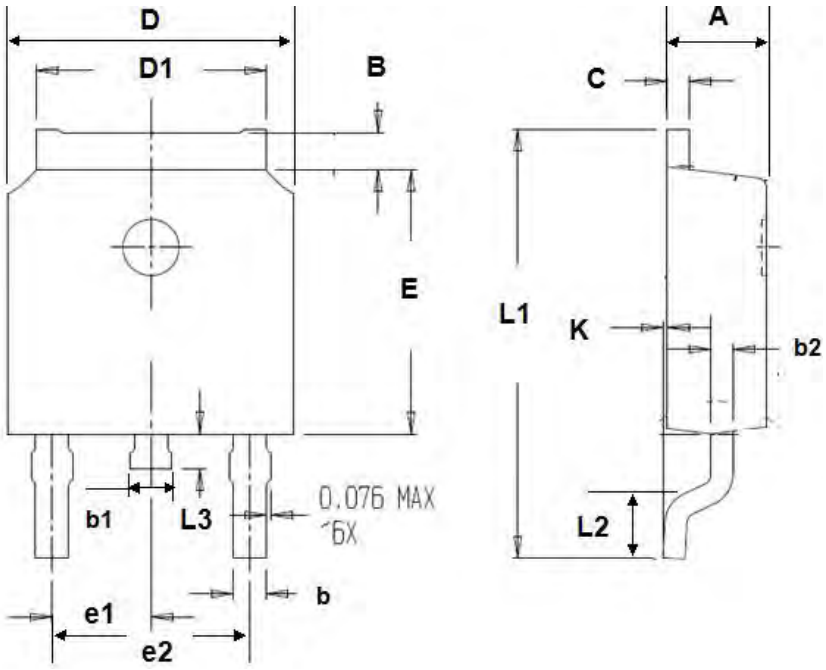
SYMBOL	min	nom	max
A	2.10		2.50
A_1	0.95		1.30
B	0.80		1.25
b	0.50		0.80
b_1	0.70		0.90
c	0.45		0.70
c1	0.45		0.70
D	6.35		6.80
D_1	5.10		5.50
E	5.30		6.30
e		2.30	
L	7.00		9.20
R		0.30	[S/L]



TO-252 MECHANICAL DATA

UNIT: mm

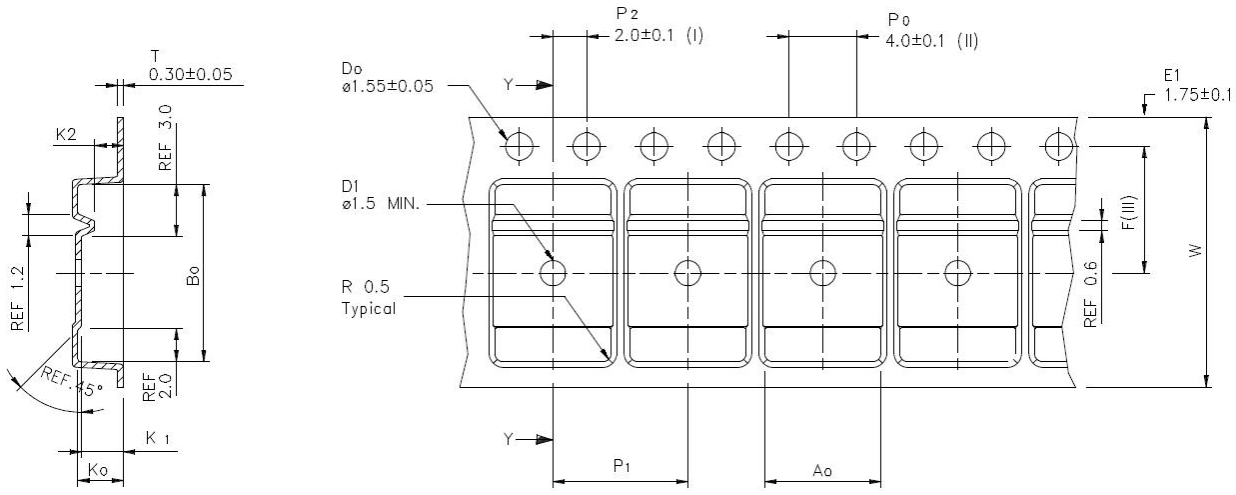
SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.80	**b1**	**0.70**	**1.20**
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			

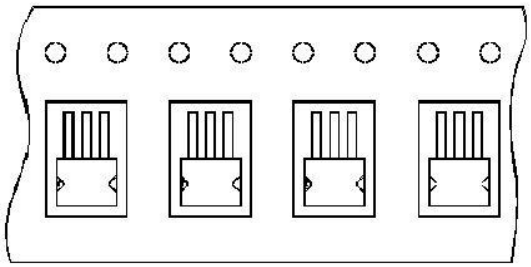


TO-252 TAPE AND REEL DATA

UNIT： mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A0	6.80	6.90	7.00	B0	10.40	10.50	10.60
K0	2.60	2.70	2.90	K1	2.40	2.50	2.60
F	7.40	7.50	7.60	K2	1.60	1.70	1.80
W	15.90	16.00	16.10	P1	7.90	8.00	8.10





UNIT ORIENTATION