

Descriptions

This is 700V 7A N-Channel Enhancement Mode Power MOSFET.

Features

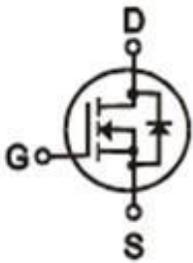
- LOW THERMAL RESISTANCE
- FAST SWITCHING
- HIGH INPUT RESISTANCE
- RoHS COMPLIANT

Parameter	Value	Unit
V_{DS}	700	V
I_D	7	A
$R_{DS(ON)(max)}@10V$	1.5	Ω

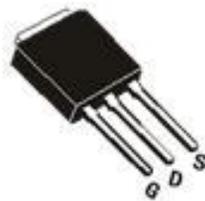
Applications

- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

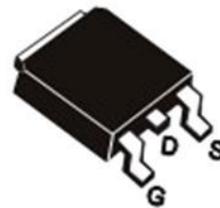
Equivalent Circuit & Pinning



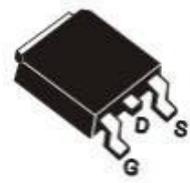
TO-251T(IPAK)



TO-251S



TO-252T



TO-252(DPAK)

Absolute Maximum Ratings(Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V_{DS}	700	V
gate-source Voltage	V_{GS}	±30	V
Continuous Drain Current TC=25°C	I_D	7.0	A
Continuous Drain Current TC=100°C	I_D	4.2	A
Drain Current — Pulsed ①	I_{DM}	28	A
Power Dissipation	P_{tot}	100	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{STG}	-55-150	°C
Single Pulse Avalanche Energy ②	E_{AS}	395	mJ

Electrical Characteristics(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	700			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_j$	$I_D=250\mu A$, Referenced to 25°C		0.65		%/°C
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0		4.0	V
Drain-source Leakage Current	I_{DSS}	$V_{DS}=700V, V_{GS}=0V, T_j=25^\circ C$			1	μA
		$V_{DS}=560V, V_{GS}=0V, T_j=125^\circ C$			10	μA
Forward Transconductance	g_{fs}	$V_{DS}=15V, I_D=3.5A$ ③		8.0		S

Electrical Characteristics(Ta=25°C)

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		0.96	1.5	Ω
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V F = 1.0MHZ		1400		pF
Output Capacitance	C _{oss}			120		
Feedback Capacitance	C _{rss}			16		
Turn-on Delay Time	T _{d(on)}	V _{DD} = 350V, I _D = 7.0A R _G = 27Ω ③		34.3		ns
Rise Time	T _r			55.0		
Turn -Off Delay Time	T _{d(off)}			163.5		
Fall Time	T _f			33.1		
Total Gate Charge	Q _g	I _D = 7.0A, V _{DS} = 560V V _{GS} = 10V③		31.5		nC
Gate-to-Source Charge	Q _{gs}			6.5		nC
Gate-to-Drain Charge	Q _{gd}			10.8		nC
Continuous Diode Forward Current	I _s				7.0	A
Diode Forward Voltage	V _{SD}	T _j = 25°C, I _s = 7.0A V _{GS} = 0V ③			1.4	V
Reverse Recovery Time	t _{rr}	T _j = 25°C, I _f = 7.0A di/dt = 100A/μs③		288		ns
Reverse Recovery Charge	Q _{rr}				3.75	

Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	R _{thJC}	1.25	°C/W
Thermal Resistance Junction-ambient	R _{thJA}	62.5	°C/W

Notes:

- ① Repetitive rating: Pulse width limited by maximum junction temperature
- ② Starting T_j = 25°C, V_{DD} = 50V, L = 15mH, R_G = 25Ω, I_{AS} = 7.0A
- ③ Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

Electrical Characteristic Curve

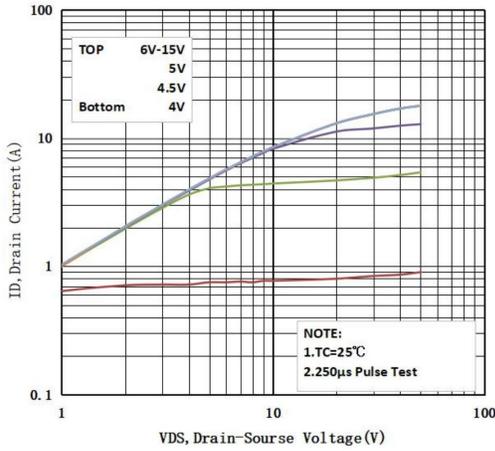


图 1 输出特性曲线, Tc=25°C

Fig1 Typical Output Characteristics, Tc=25°C

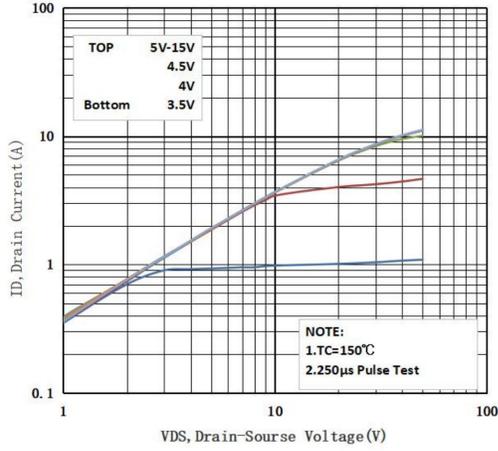


图 2 输出特性曲线, Tc=150°C

Fig2 Typical Output Characteristics, Tc=150°C

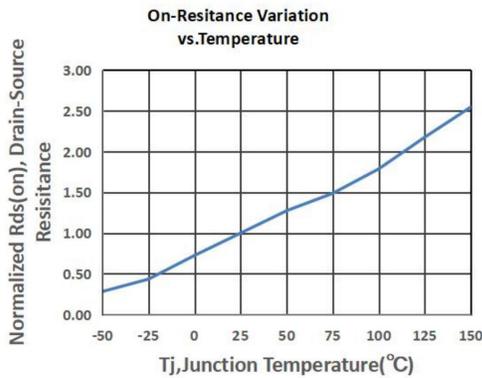


图 3 归一化通电阻与温度曲线

Fig3 Normalized Resistance Vs. Temperature

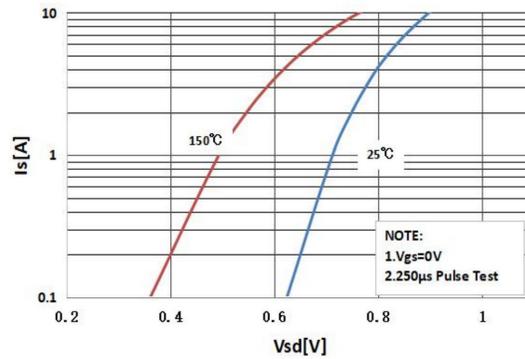


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

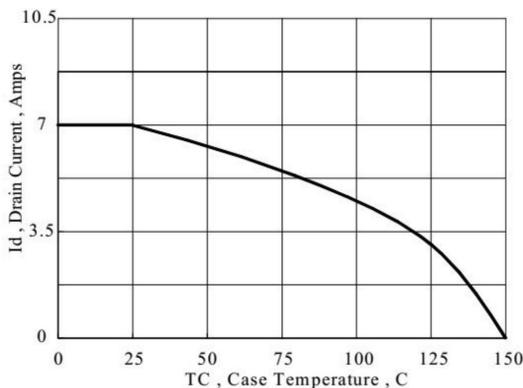


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs. Case Temperature

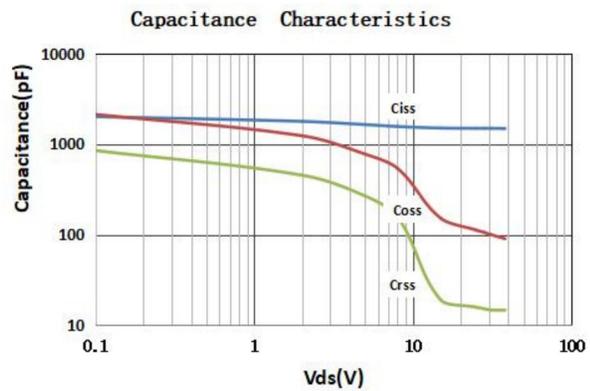


图 6 电容曲线

Fig6 Capacitance Characteristics

Electrical Characteristic Curve

On-Resistance Variation VS. Drain Current and Gate Voltage

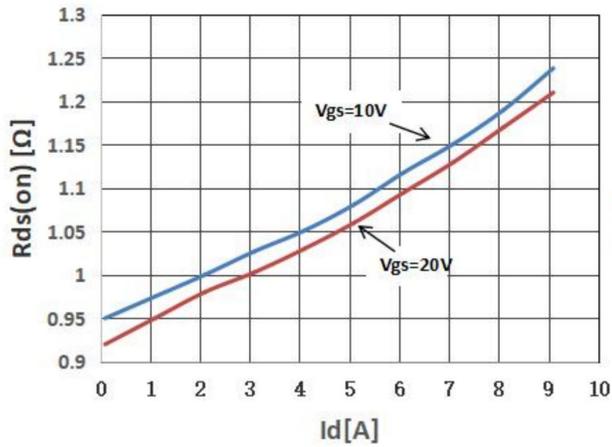


图 7 导通电阻与漏极电流和栅极电压曲线

Fig7 On-Resistance Vs.Drain Current and Gate Voltage

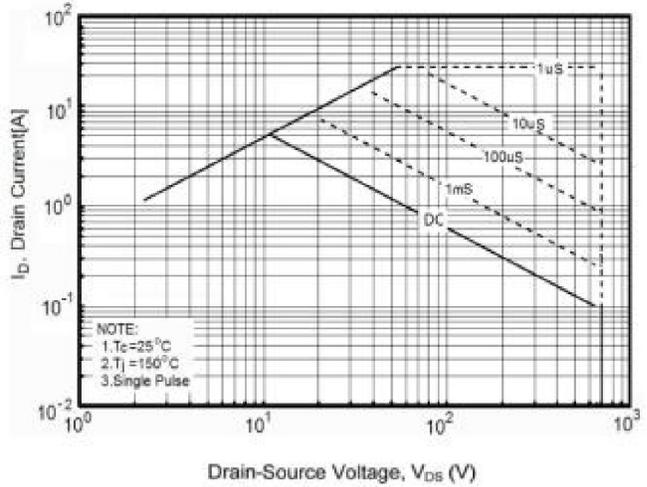


图 8 最大安全工作区曲线

Fig8 Maximum Safe Operating Area

Marking Instructions



Note:

COT: Company Code

7N70: Product Type.

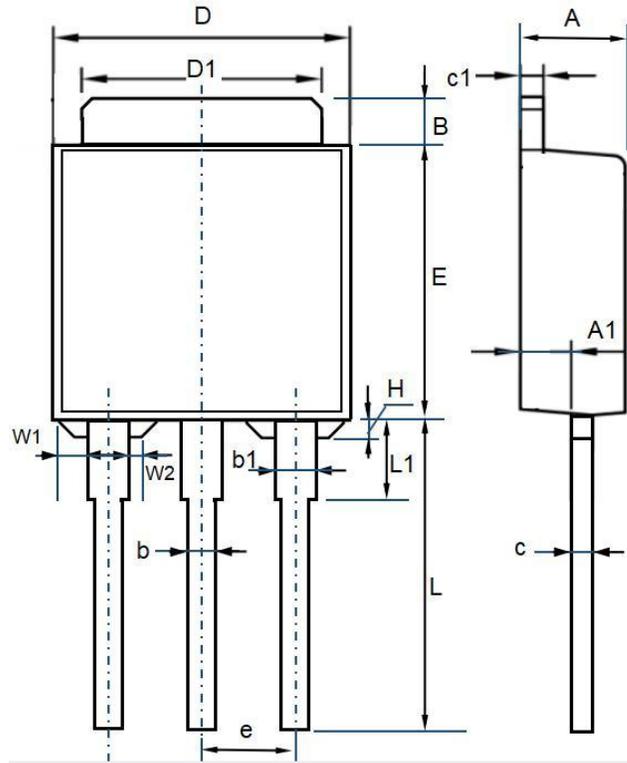
*****: *: Inner Code * : Year Code **: Week Code **: Lot Code.

Packaging SPEC

Part	Package	Marking	Packing method
CT7N70IPT	TO-251T(IPAK)	7N70	TUBE
CT7N70IPS	TO-251S	7N70	TUBE
CT7N70DPT	TO-252T	7N70	TAPE & REEL
CT7N70DPK	TO-252(DPAK)	7N70	TUBE

Package Outline Dimensions

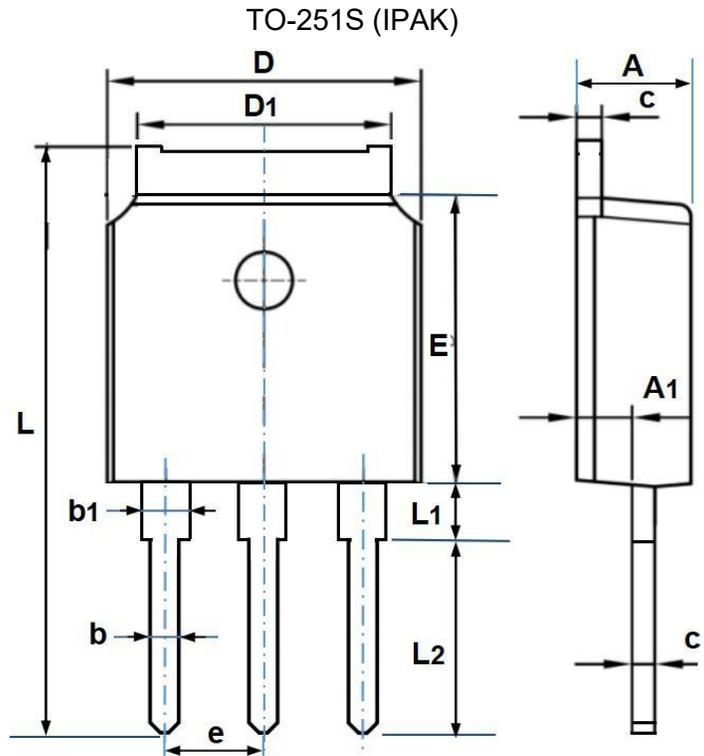
TO-251T (IPAK)



单位:毫米/UNIT: mm

符号/SYMBOL	最小值/min	典型值/nom	最大值/max
A	2.10		2.50
A ₁	0.95		1.30
B	0.80		1.25
b	0.50		0.70
b ₁	0.70		0.85
c	0.45		0.70
c ₁	0.45		0.70
D	6.30		6.80
D ₁	5.10		5.50
E	5.30		6.30
e	2.25	2.30	2.35
L	7.00		9.20
L ₁	1.60		1.80
H	0.35		0.45
W ₁	0.30		0.50
W ₂	0.20		0.40

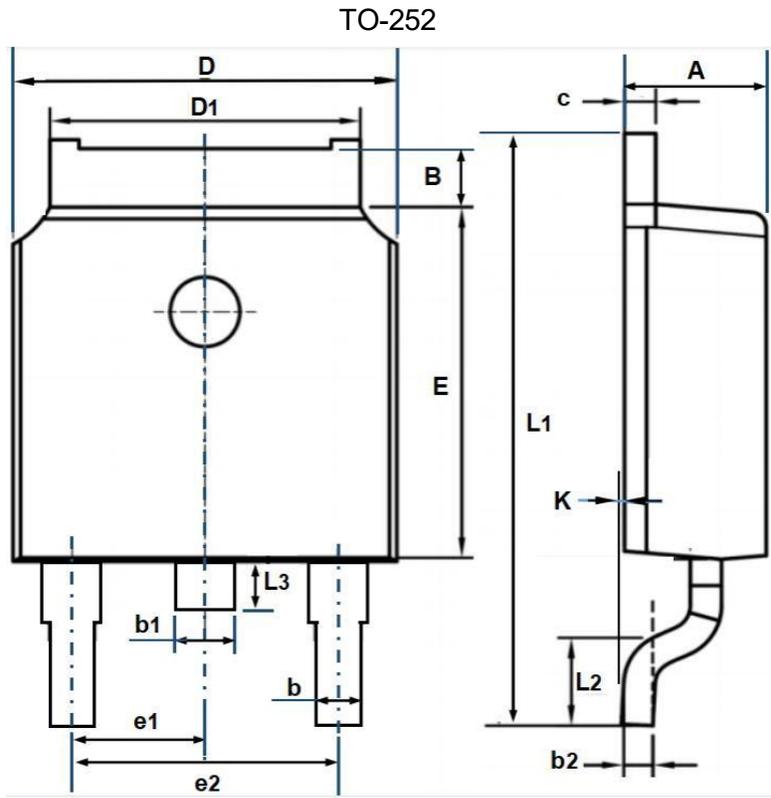
Package Outline Dimensions



单位:毫米/UNIT: mm

符号/SYMBOL	最小值/min	典型值/nom	最大值/max
A	2.20		2.40
A1	0.90		1.30
b	0.50		0.85
b1	0.90		1.15
C	0.45	0.50	0.60
D	6.50		6.70
D1	5.10		5.50
E	5.60		6.20
e	2.18	2.29	2.38
L	11.00		12.40
L1	0.90		1.20
L2	3.5		4.2

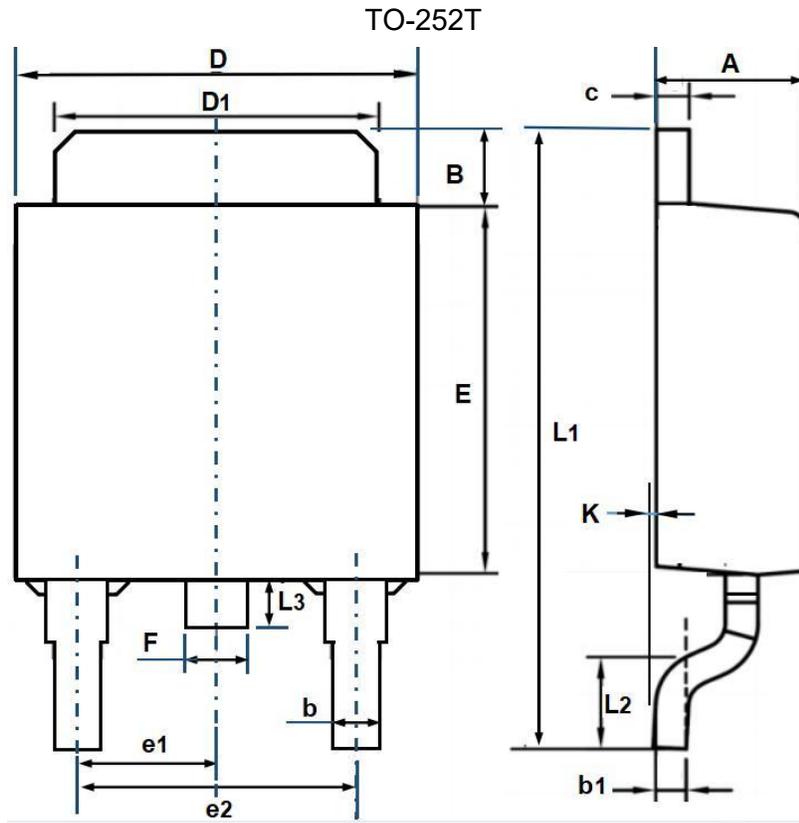
Package Outline Dimensions



单位:毫米/UNIT: mm

符号 SYMBOL	最小值 min	最大值 max	符号 SYMBOL	最小值 min	最大值 max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.85	b1	0.90	1.15
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			

Package Outline Dimensions



单位:毫米/UNIT: mm

符号 SYMBOL	最小值 min	最大值 max	符号 SYMBOL	最小值 min	最大值 max
A	2.20	2.40	B	0.85	1.25
b	0.50	0.80	C	0.45	0.70
b1	0.45	0.70	D	6.30	6.70
D1	5.10	5.50	E	5.30	6.20
L1	9.20	10.60	F	0.50	0.90
L2	0.90	1.50	e1	2.25	2.35
L3	0.60	1.10	e2	4.50	4.70
			K	0.00	0.18