AU7N65AS

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	1.3Ω@10V	7A

Feature

- Avalanche energy tested
- Low gate charge
- Fast switching capability

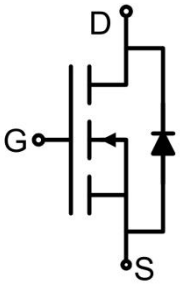
Application

- Power factor correction
- Switched mode power supplies
- Uninterruptible power supply

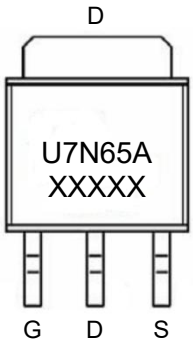
Package

TO-251AB

Circuit diagram



Marking



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Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	7	A
Continuous Drain Current（100℃）	I_D (100℃)	4.5	A
Pulsed Drain Current	I_{DM}	28	A
Power Dissipation	P_D	54	W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	63	℃/W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	2.31	℃/W
Single pulse avalanche energy	E_{AS}	173	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	650			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =650V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±30V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	V
Drain-source on-resistance[1)]	$R_{DS(on)}$	V_{GS} =10V, I_D =3.5A		0.91	1.3	Ω
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		1080		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			2.5		
Total Gate Charge	Q_g	V_{DS} =520V,V_{GS} =10V,I_D =7A I_G =1mA		13		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			2.2		
Turn-on delay time	$t_{d(on)}$	V_{DD}=100V, V_{GS} =10V, I_D =7A,R_{GEN}=25Ω		7		nS
Turn-on rise time	t_r			16		
Turn-off delay time	$t_{d(off)}$			36		
Turn-off fall time	t_f			22		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				7	A
Diode Forward voltage[1)]	V_{DS}	V_{GS} =0V, I_S=7A			1.4	V
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F =7A di/dt = 100A/μs [1)]		250		nS
Reverse Recovery Charge	Q_{rr}			4.5		μC

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

Fig.1 Drain Current vs. Gate-Source Voltage

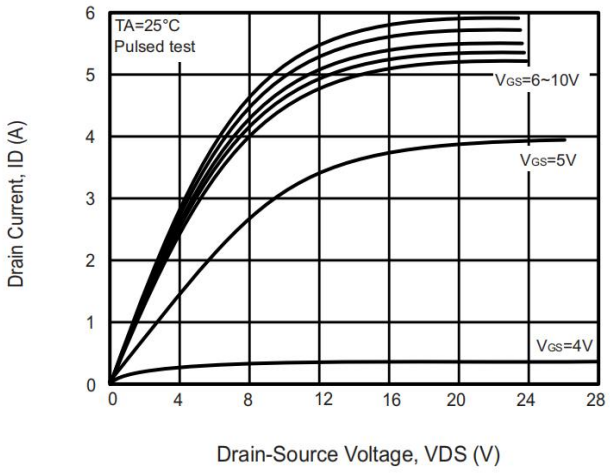


Fig.2 Drain-Source On-Resistance vs. Gate-Source Voltage

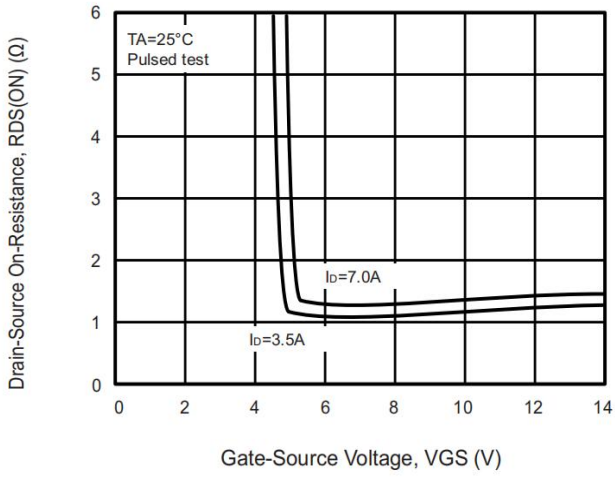


Fig.3 Gate Charge Characteristics

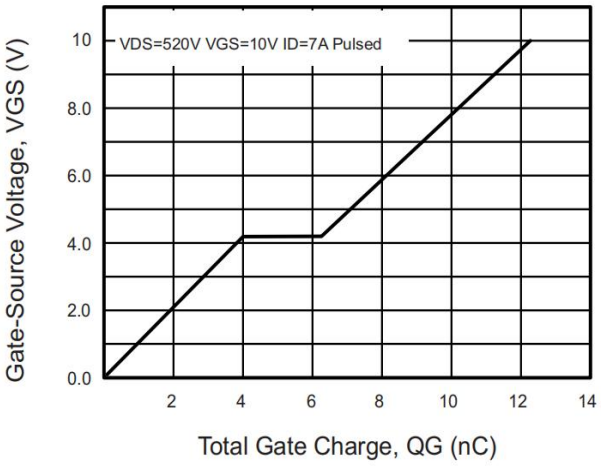


Fig.4 Capacitance Characteristics

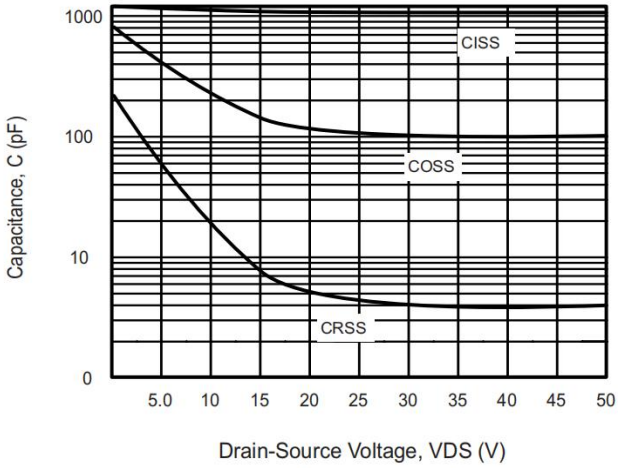


Fig.5 Drain-Source On-Resistance vs. Junction Temperature

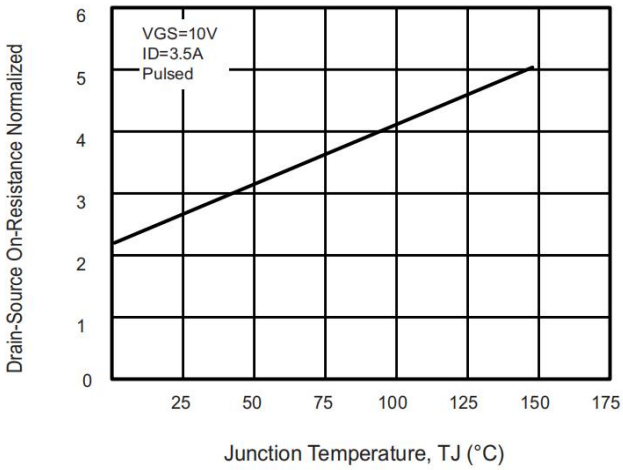
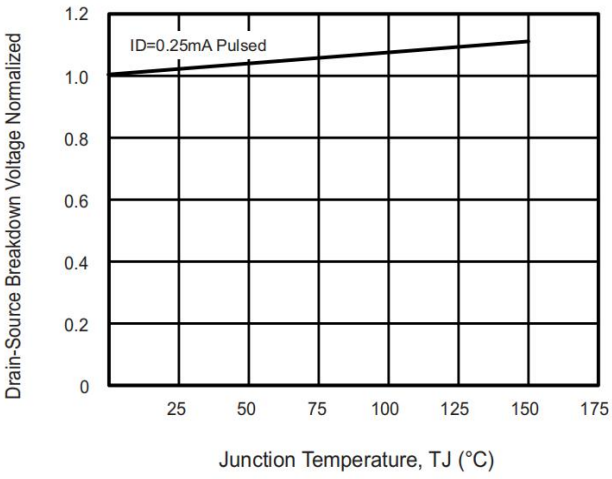


Fig.6 Breakdown Voltage vs. Junction Temperature



Typical Characteristics

Fig.7 Gate Threshold Voltage vs. Junction Temperature

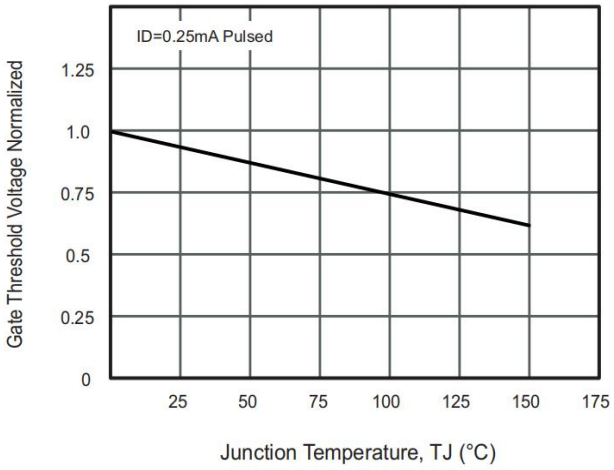


Fig.8 Source Current vs. Source-Drain Voltage

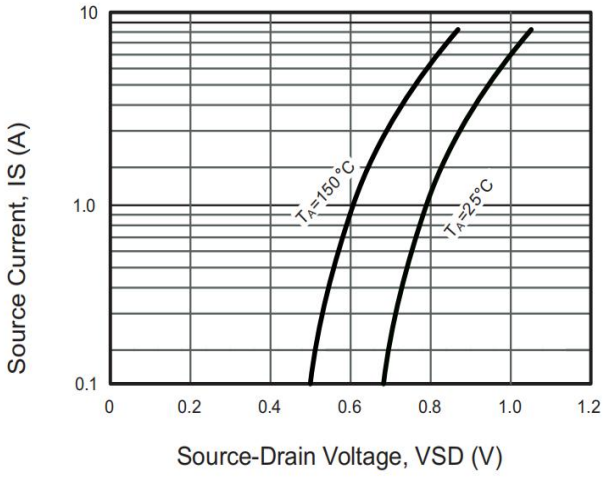


Fig.9 Drain Current vs. Gate-Source Voltage

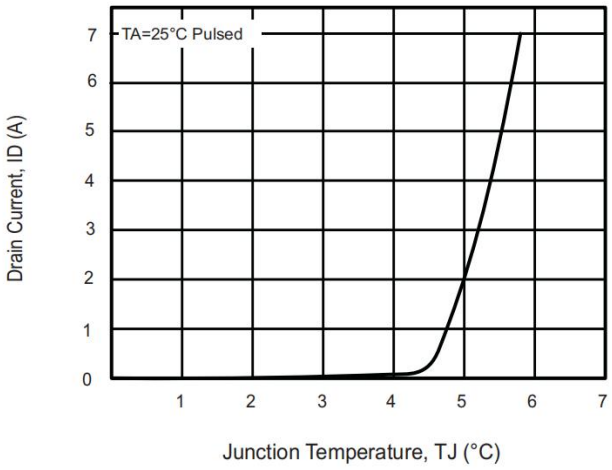


Fig.10 Drain-Source On-Resistance vs. Drain Current

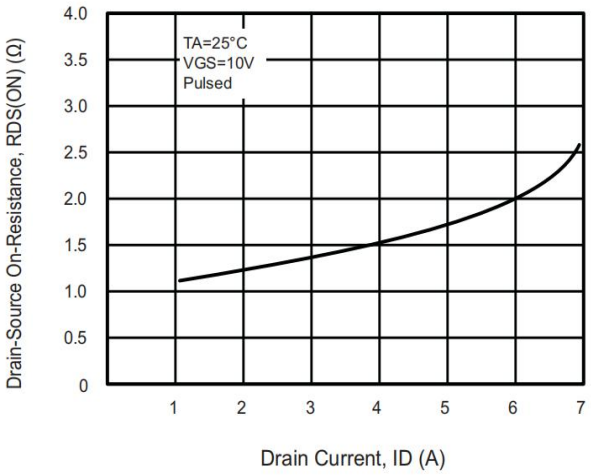


Fig.11 Drain Current vs. Junction Temperature

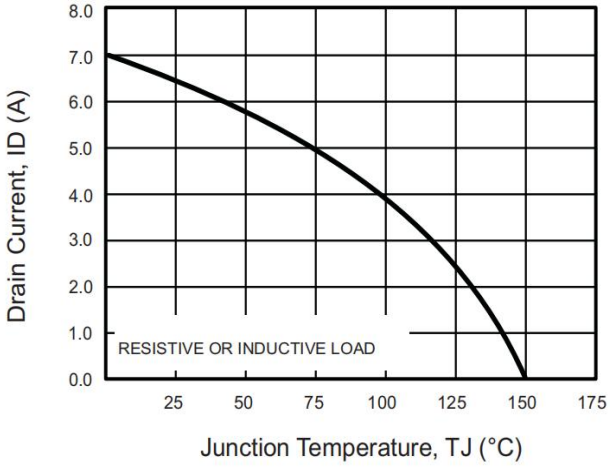
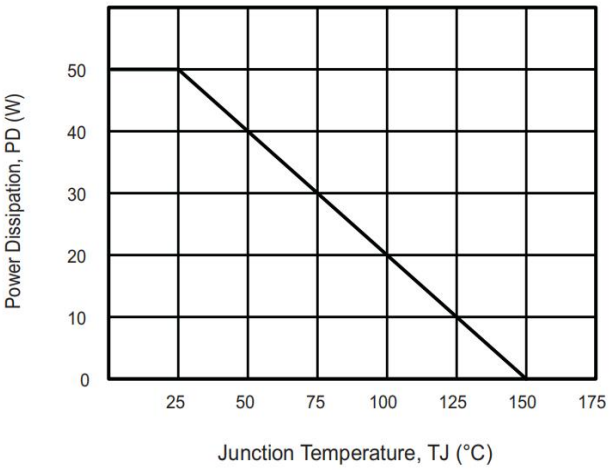
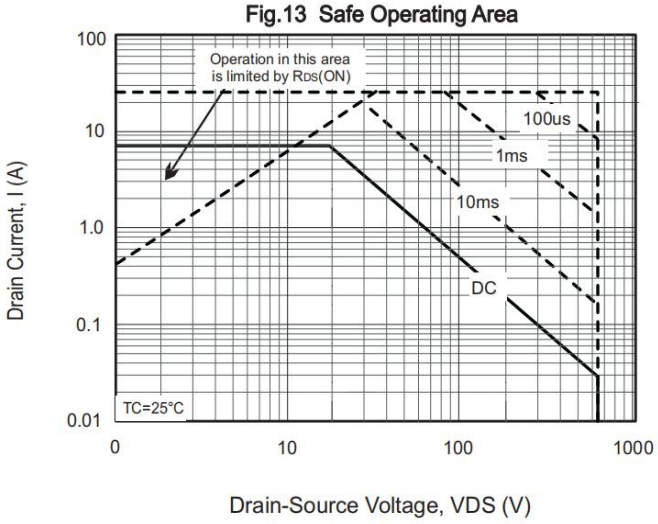


Fig.12 Power Dissipation vs. Junction Temperature

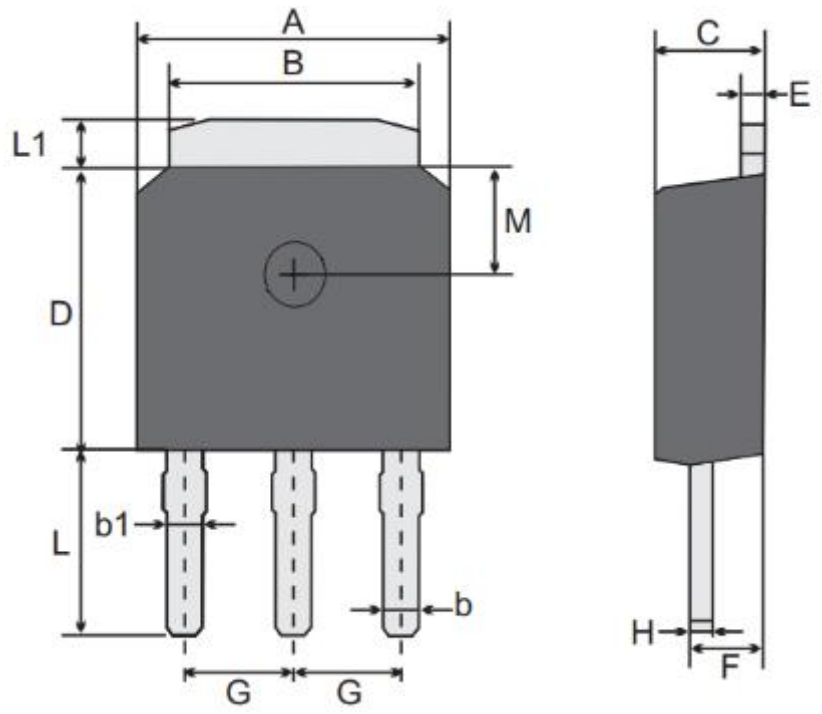


Typical Characteristics

Fig.13 Safe Operating Area



TO-251AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.300	6.700	0.248	0.264
B	5.100	5.500	0.201	0.217
b	0.300	0.800	0.012	0.031
b1	0.760	0.900	0.030	0.035
C	2.100	2.500	0.083	0.098
D	5.900	6.300	0.232	0.248
E	0.400	0.600	0.016	0.024
F	1.300	1.800	0.051	0.071
G	2.290 TYP.		0.090 TYP.	
H	0.450	0.600	0.018	0.024
L	3.500	4.500	0.138	0.177
L1	0.800	1.250	0.031	0.049
M	1.800 TYP.		0.070 TYP.	