ATR028N08AS

N-Channel Super Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
85V	2.8mΩ@10V	200A

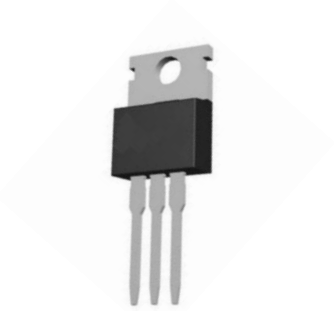
Feature

- Excellent gate charge x $R_{DS(on)}$ product (FOM)
- Very low on-resistance $R_{DS(on)}$

Application

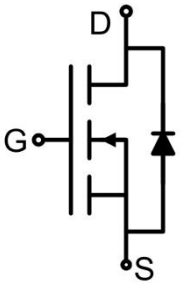
- DC-DC converter
- Ideal for high-frequency switching and synchronous rectification

Package



TO-220AB

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	200	A
Continuous Drain Current(T_C=100℃)	I_D(100℃)	150	A
Pulsed Drain Current	I_{DM}	800	A
Maximum Power Dissipation	P_D	245	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.61	℃/W
Single Pulse Avalanche Energy[1)]	E_{AS}	1767	mJ
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

Electrical characteristics (T_C=25 ℃ 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	85			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =85V,V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	3.0	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =100A		2.55	2.8	mΩ
Forward Transconductance	g_{FS}	V_{DS} =5V, I_D =100A		200		S
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =40V,V_{GS} =0V, f =1.0MHz		7680		pF
Output Capacitance	C_{oss}			1472		
Reverse Transfer	C_{rss}			60		
Total Gate Charge	Q_g	V_{DS} =40V,V_{GS} =10V, I_D =100A		124		nC
Gate-Source Charge	Q_{gs}			37		
Gate-Drain Charge	Q_{gd}			33		
Turn-on delay time	$t_{d(on)}$	V_{DD}=40V, V_{GS} =10V, I_D =100A,R_G=1.6Ω		25		nS
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			52		
Turn-off fall time	t_f			17		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				200	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =100A			1.2	V
Reverse Recovery Time	t_{rr}	I_F =100A,di/dt =100A/μs, T_j =25°C		98		nS
Reverse Recovery Charge	Q_{rr}			280		nC

Notes:

1) EAS condition : Tj=25℃,V_{DD}=40V,V_G=10V,L=0.5mH,Rg=25Ω

2) Guaranteed by design, not subject to production

Typical Characteristics

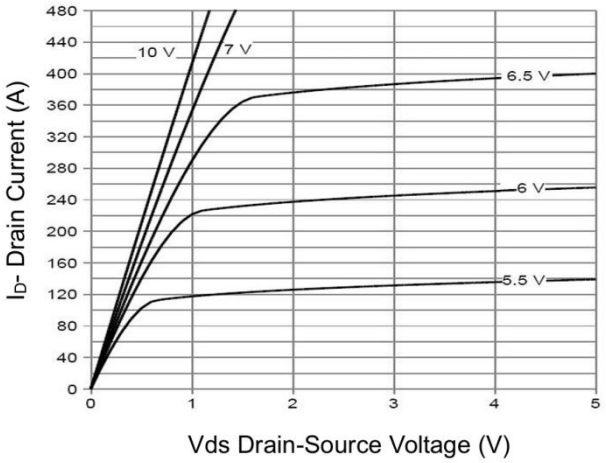


Figure 1 Output Characteristics

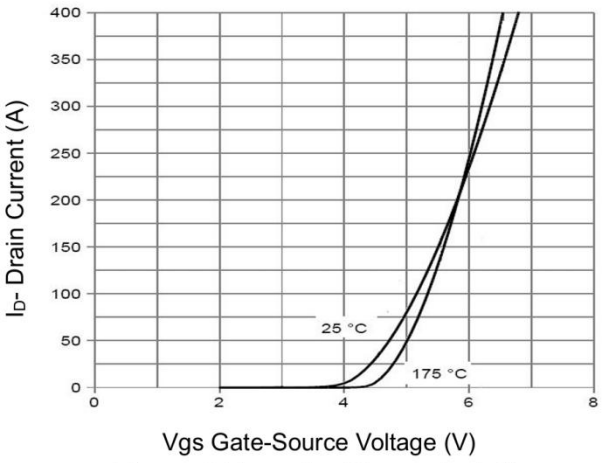


Figure 2 Transfer Characteristics

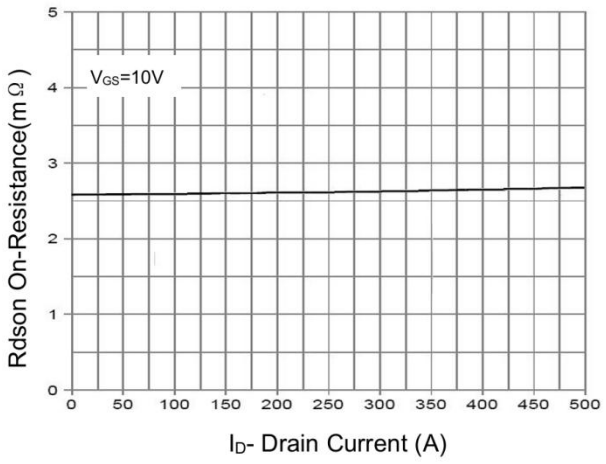


Figure 3 Rdson- Drain Current

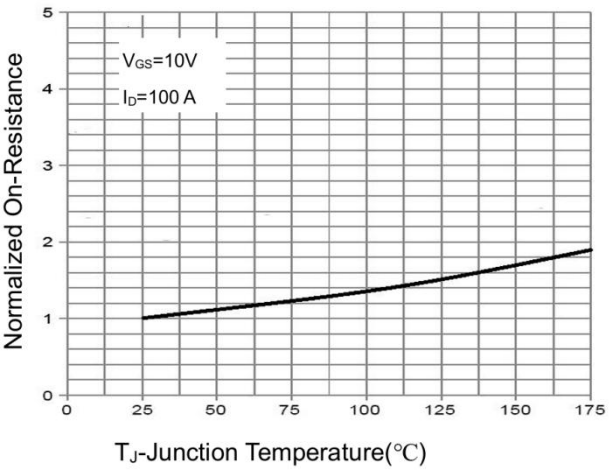


Figure 4 Rdson-Junction Temperature

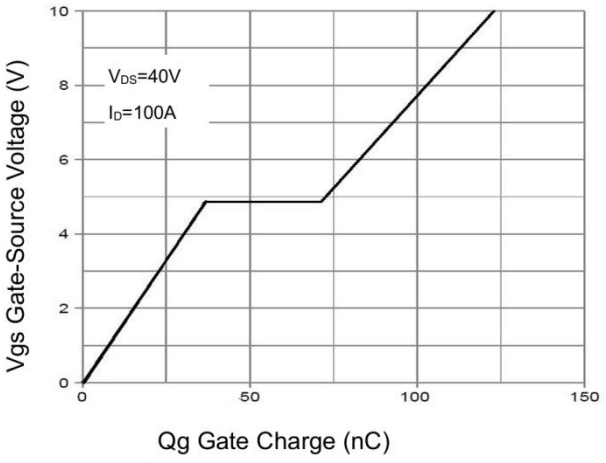


Figure 5 Gate Charge

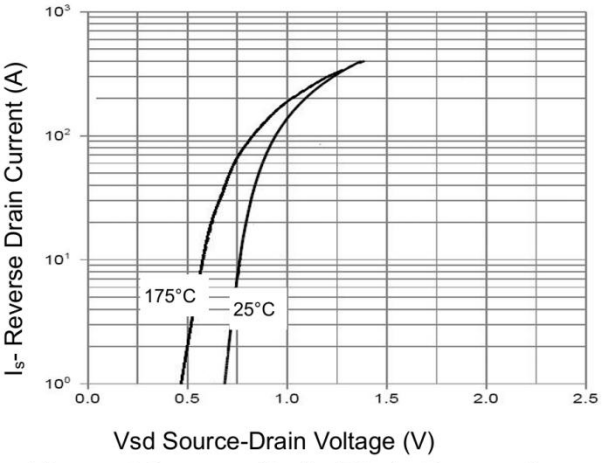


Figure 6 Source- Drain Diode Forward

Typical Characteristics

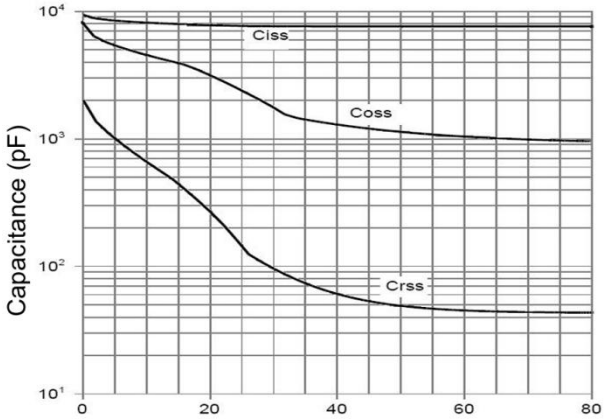


Figure 7 Capacitance vs Vds

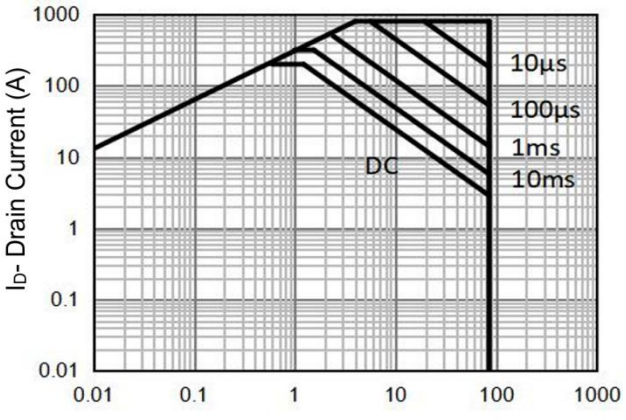


Figure 8 Safe Operation Area

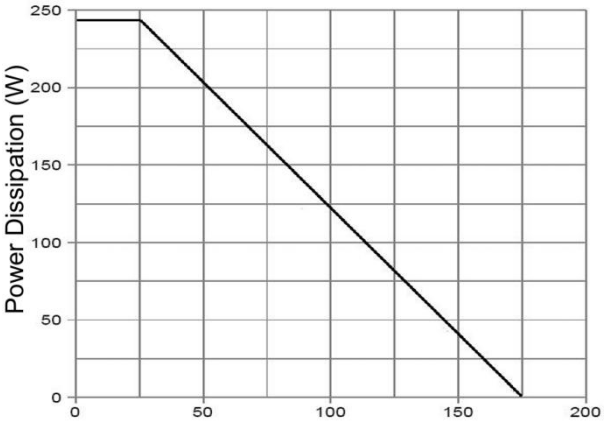


Figure 9 Power De-rating

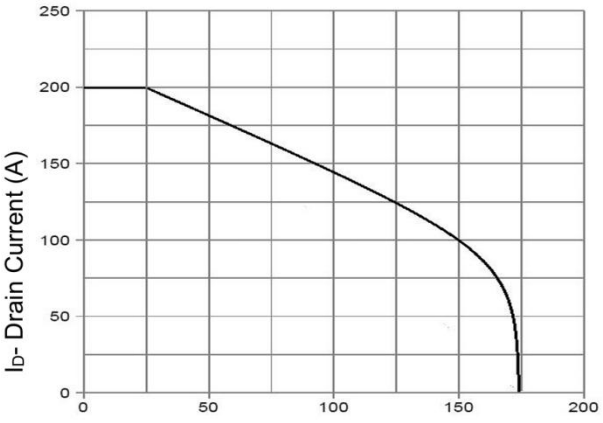


Figure 10 Current De-rating

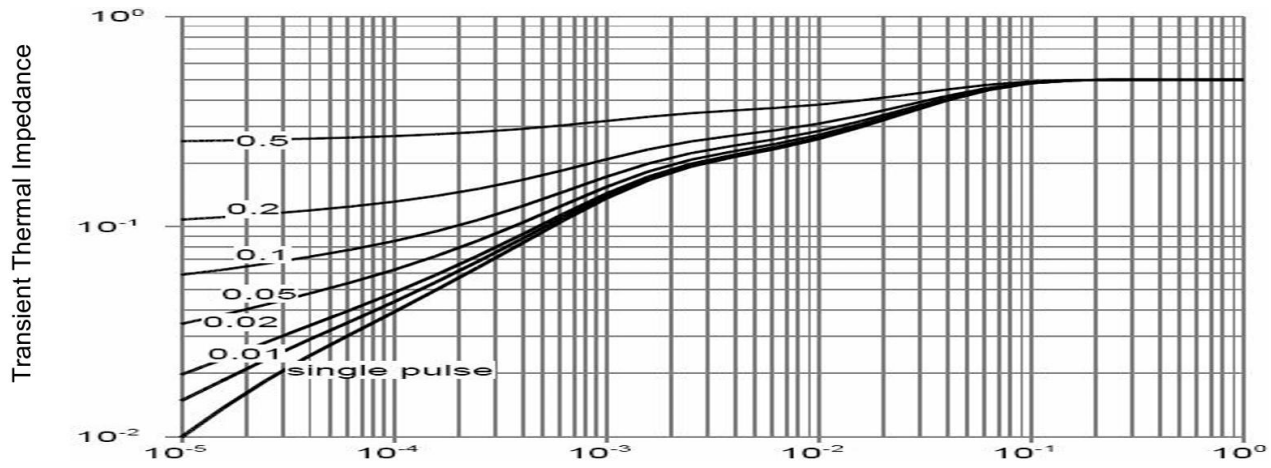
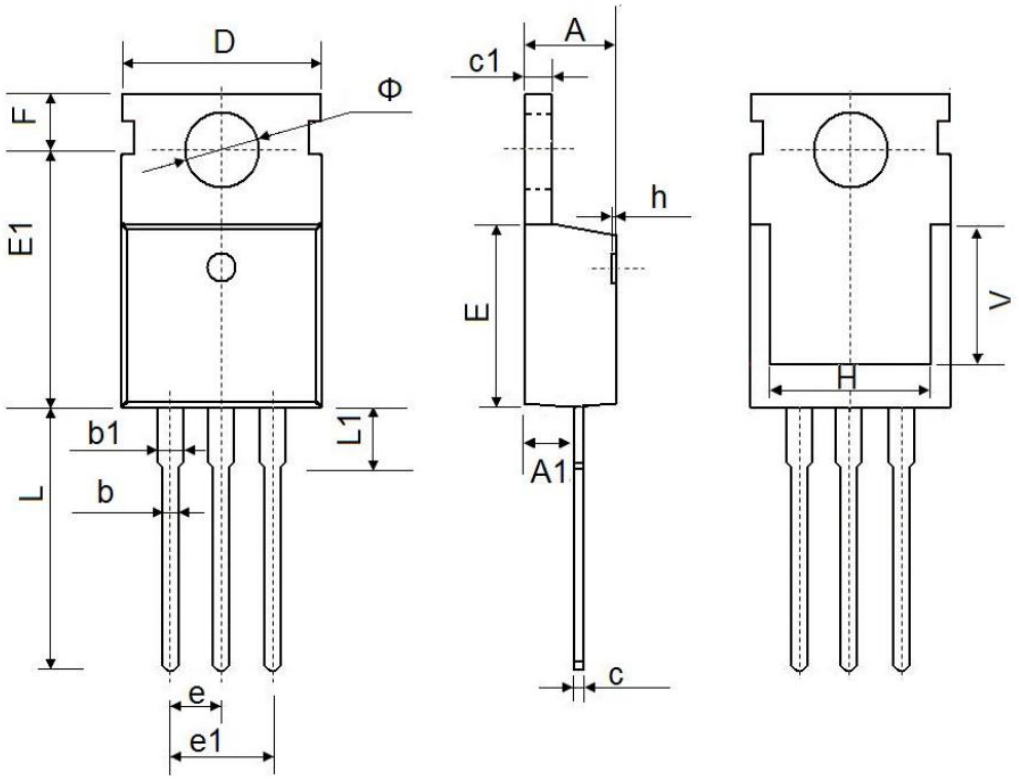


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	12.950	0.498	0.510
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150