PAN2312R

N-CH 20V Fast Switching MOSFET

V_{DS}=20V, I_D=2.1A, $RDS_{(ON)}$=60mΩ

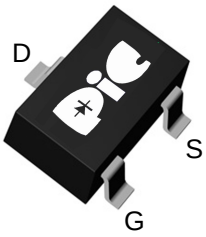
➢ General Description

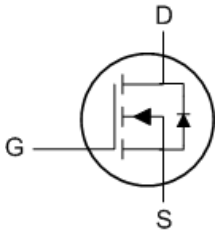
This PAN2312R N-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent Rds(On) performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

➢ Feature

- ●Super high density cell design for extremely low RDS (ON)
- ●Exceptional on-resistance and maximum DC current capability
- ●SOT-323 package design

➢ SOT-323





➢ Application

- ●Portable Equipment
- ●Battery Powered System
- ●Net Working System

➢ Absolute Maximum Ratings

Parameter	Symbols	Rating	Units
Drain-Source Voltage	VDS	20	V
Gate-Source Voltage	VGS	±8	V
Continuous Drain Current	ID	2.1	A
Continuous Source Current (Diode Conduction)	IS	0.6	A
Power Dissipation	PD	350	mW
Junction Temperature	Tj	150	℃
Storage Temperature	Tstg	-50-+150	℃
Thermal Resistance From Junction to Ambient (note2)	RθJA	357	℃/W

➢ Electrical Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V(BR)DSS	VGS=0V, ID=10uA	20			V
Gate-Threshold voltage (note3)	VGS (th)	VDS=VGS, ID=50uA	0.65	0.95	1.2	V
Gate-body Leakage	IGSS	VDS=0V, VGS=±8V			±100	nA
Zero Gate Voltage Drain current	IDSS	VDS=20V, VGS=0V			1	uA
Drain-Source On-Resistance (note3)	RDS(ON)	VGS=4.5V, ID=3.6A		35	60	mΩ
		VGS=2.5V, IC=3.1A		45	115	
Forward trans conductance (note3)	gfs	VDS=5V, ID=3.6A		8		S
Diode forward voltage (note3)	VSD	IS=0.94A, VGS=0V		0.76	1.2	V
Dynamic Characteristics (note4)						
Input capacitance	Ciss	VDS=10V, VGS=0V,f=1MHz		300		pF
Output capacitance	Coss			120		
Reverse Transfer capacitance	Crss			80		
Total gate charge	Qg	VDS=10V, VGS=4.5V, ID=3.6A		4.0	10	nC
Gate-source charge	Qgs			0.65		
Gate-drain charge	Qgd			1.5		
Switching						
Turn-on Time	td(on)	VDD=10V, RL=5.5Ω, VGEN=4.5V, ID=3.6A, RG=6Ω		7	15	ns
Rise time	tr			55	80	
Turn-off Time	td(off)			16	60	
Fall time	tf			10	25	

Notes:

1, Repetitive rating: Pulse width limited by junction temperature.

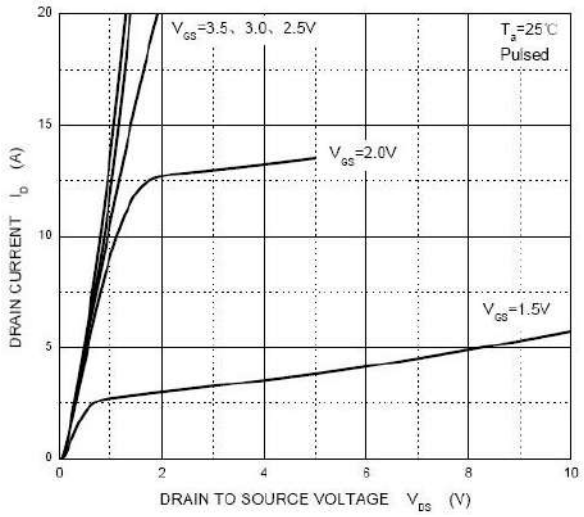
2, Surface mounted on FR4 board, t≤10s.

3, Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%.

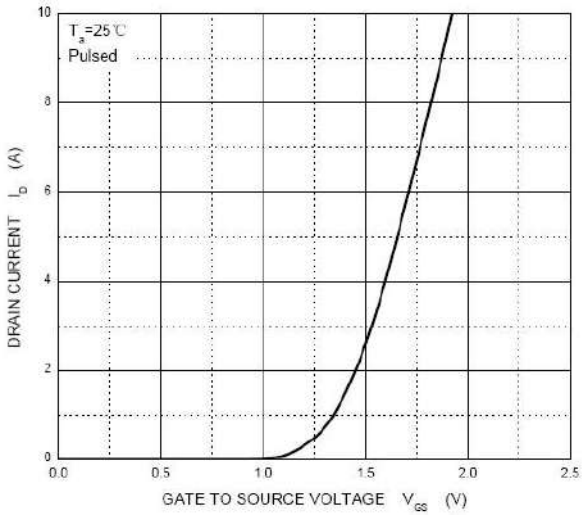
4. Guaranteed by design, not subject to producting.

➢ Typical Characteristics

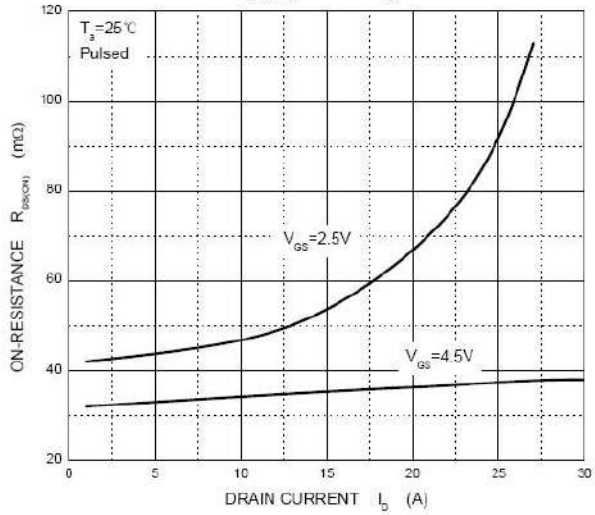
Output Characteristics



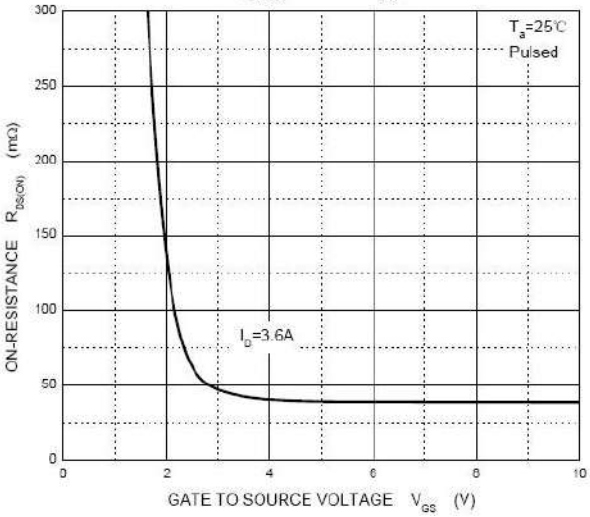
Transfer Characteristics



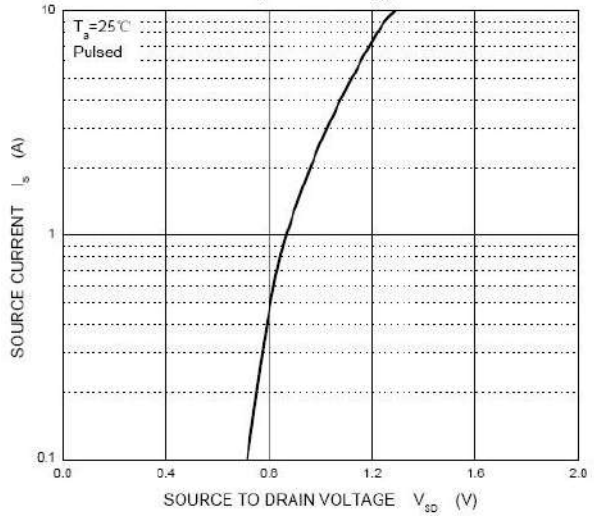
$R_{DS(ON)}$ — I_D



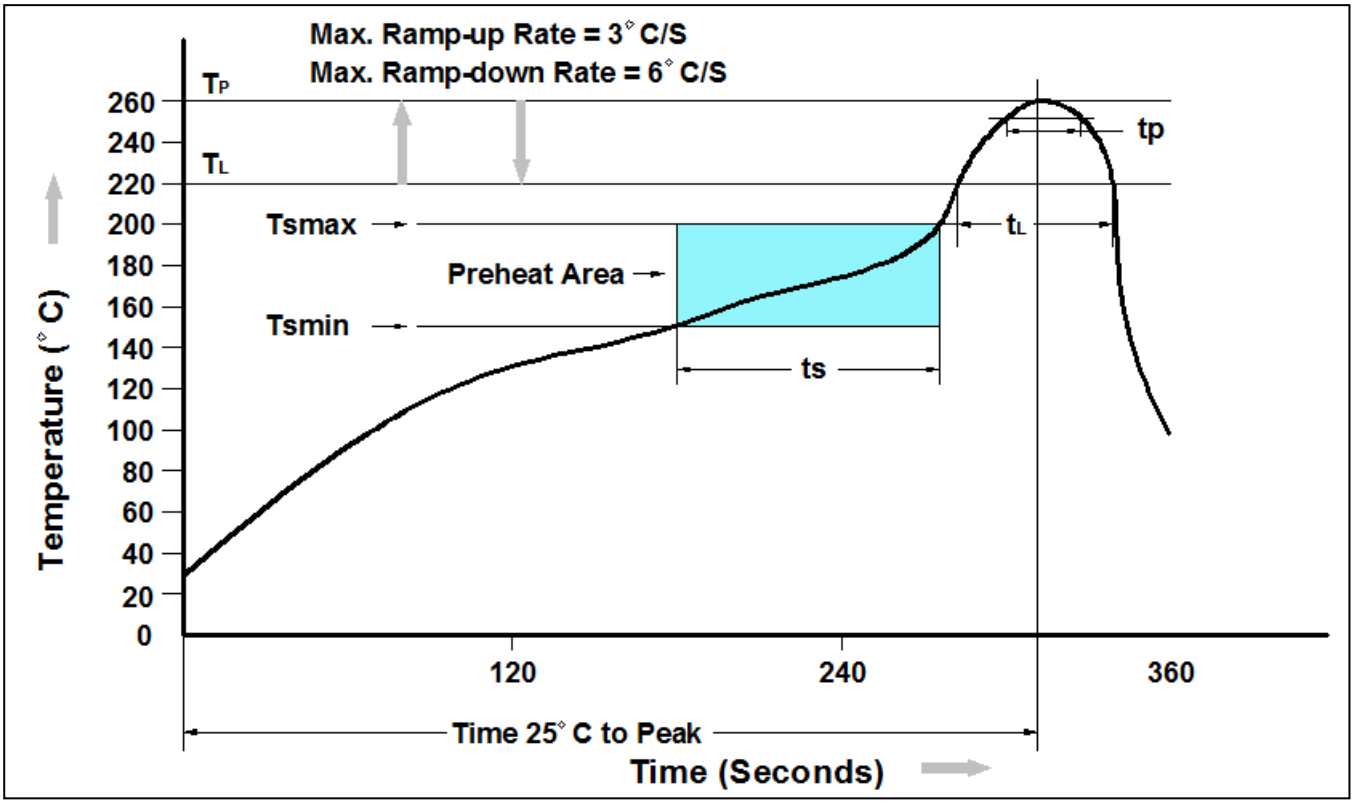
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



➢ Recommand IR Reflow Soldering Thermal Profile

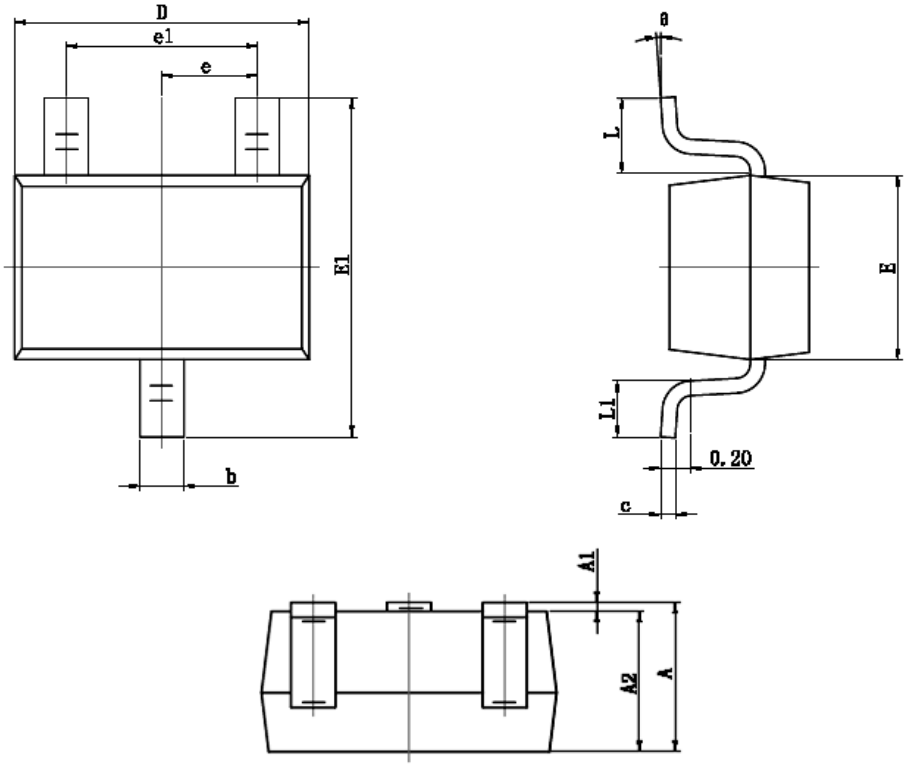


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➢ Ordering Information

Part Number	Description	Quantity
PAN2312R	SOT-323 Reel	3000 pcs

➢ Package Information (SOT-323)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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