

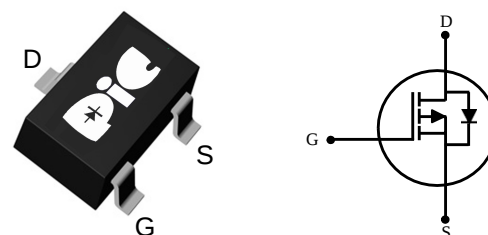
➤ General Description

This PAP6004N P-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent $R_{ds(On)}$ 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 Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology
- SOT-23 Package design

➤ SOT-23



➤ Application

- Load Switch
- Portable instrument
- MB / NB / 3C device

➤ Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	-0.4	A
Pulsed Drain Current (Note 1)	I_{DM}	-1.2	A
Power Dissipation (Note 2)	P_D	0.5	W
Thermal Resistance from Junction to Ambient (Note 2)	$R_{\theta JA}$	250	$^{\circ}C/W$
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^{\circ}C$

Note :

1. Pulse Width $\leq 100\mu s$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}C$.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

➤ **Electrical Characteristics ($T_J=25^\circ C$ Unless otherwise noted)**

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	I _D =-250μA	V _{(BR)DSS}	-60	-	-	V
Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	V _{GS(th)}	-0.8	-	-2.0	V
Zero Gate Voltage Drain Current	V _{DS} =-60V	I _{DSS}	-	-	-1	μA
Gate-Body Leakage Current	V _{GS} =±20V	I _{GSS}	-	-	±0.1	μA
Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-0.2A	R _{DS(on)}	-	-	3.6	Ω
	V _{GS} =-4.5V, I _D =-0.1A		-	-	5.4	
Forward Transconductance	V _{DS} =-5V, I _D =-0.2A	g _{FS}	-	0.4	-	S
Dynamic						
Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _D =-0.4A	Q _g	-	0.9	-	nC
			-	1.7	-	
Gate-Source Charge	V _{DS} =-30V, V _{GS} =-4.5V, I _D =-0.4A	Q _{gs}	-	0.5	-	
Gate-Drain Charge		Q _{gd}	-	0.2	-	
Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	C _{iss}	-	42.0	-	pF
Output Capacitance		C _{oss}	-	3.6	-	
Reverse Transfer Capacitance		C _{rss}	-	1.4	-	
Turn-On Delay Time	V _{DS} =-30V, I _D =-0.4A, V _{GS} =-10V, R _g =3.9Ω	t _{d(on)}	-	6.8	-	ns
Turn-On Rise Time		t _r	-	7.5	-	
Turn-Off Delay Time		t _{d(off)}	-	36.0	-	
Turn-Off Fall Time		t _f	-	22.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	I _S =-0.1A, V _{GS} =0V	V _{SD}	-	-	-1	V
Diode Continuous Forward Current	-	I _S	-	-	-0.4	A
Reverse Recovery Time	I _S =-0.4A, di/dt=100A/μs	t _{rr}	-	20	-	ns
Reverse Recovery Charge		Q _{rr}	-	13	-	nC

➤ Typical Characteristics

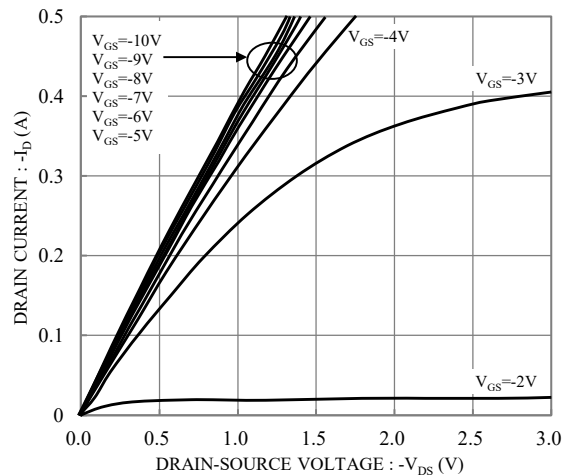


Fig.1 Typical Output Characteristics

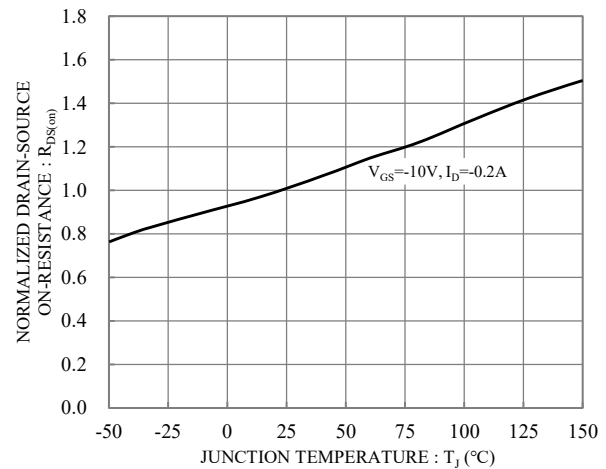


Fig.2 On-Resistance vs. Junction Temperature

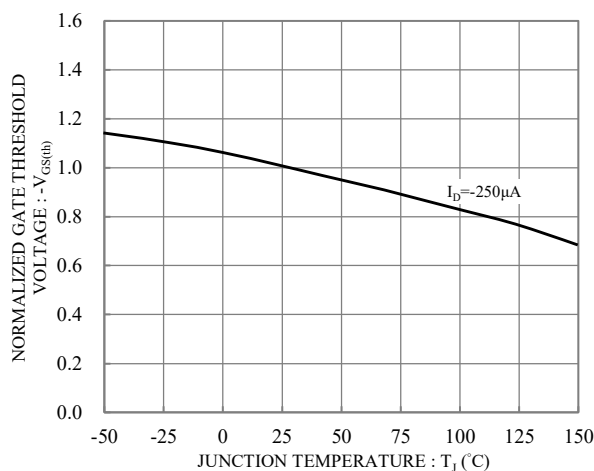


Fig.3 Gate Threshold Voltage vs. Junction Temperature

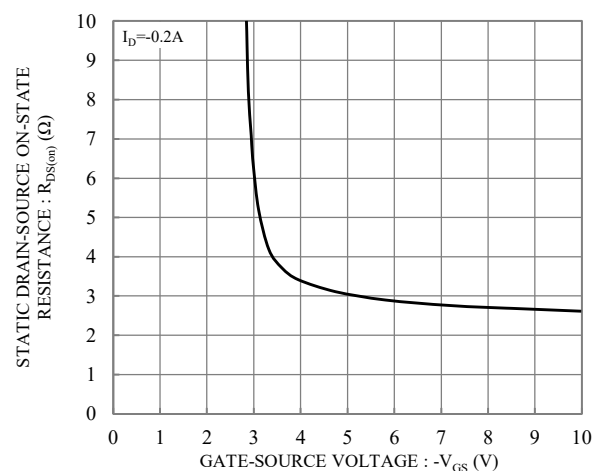


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

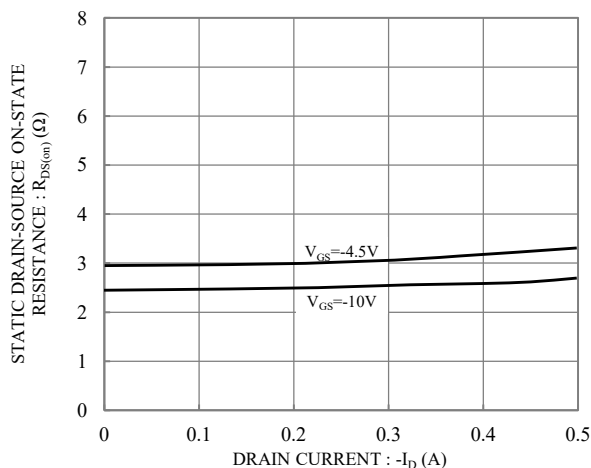


Fig.5 Static Drain-Source On-State Resistance vs. Drain current

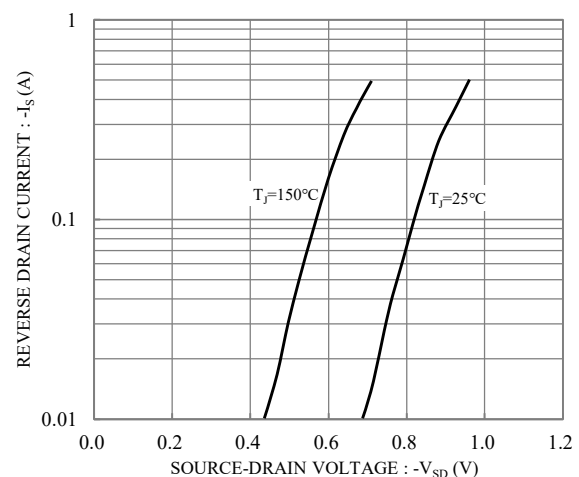
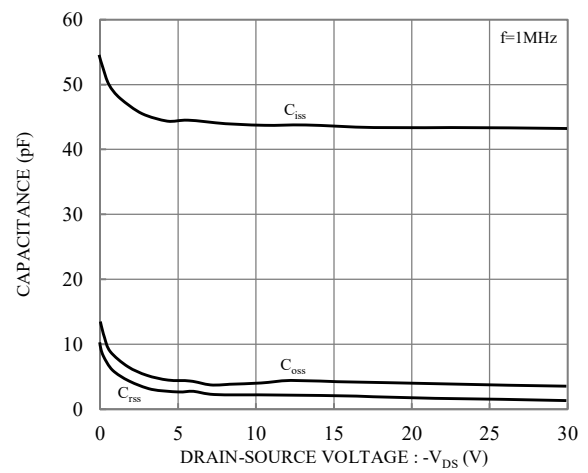
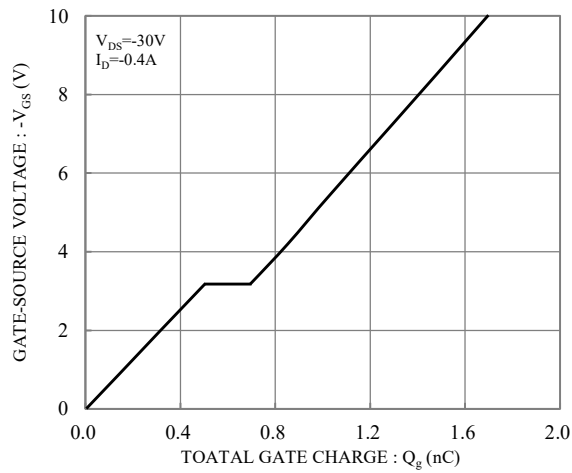
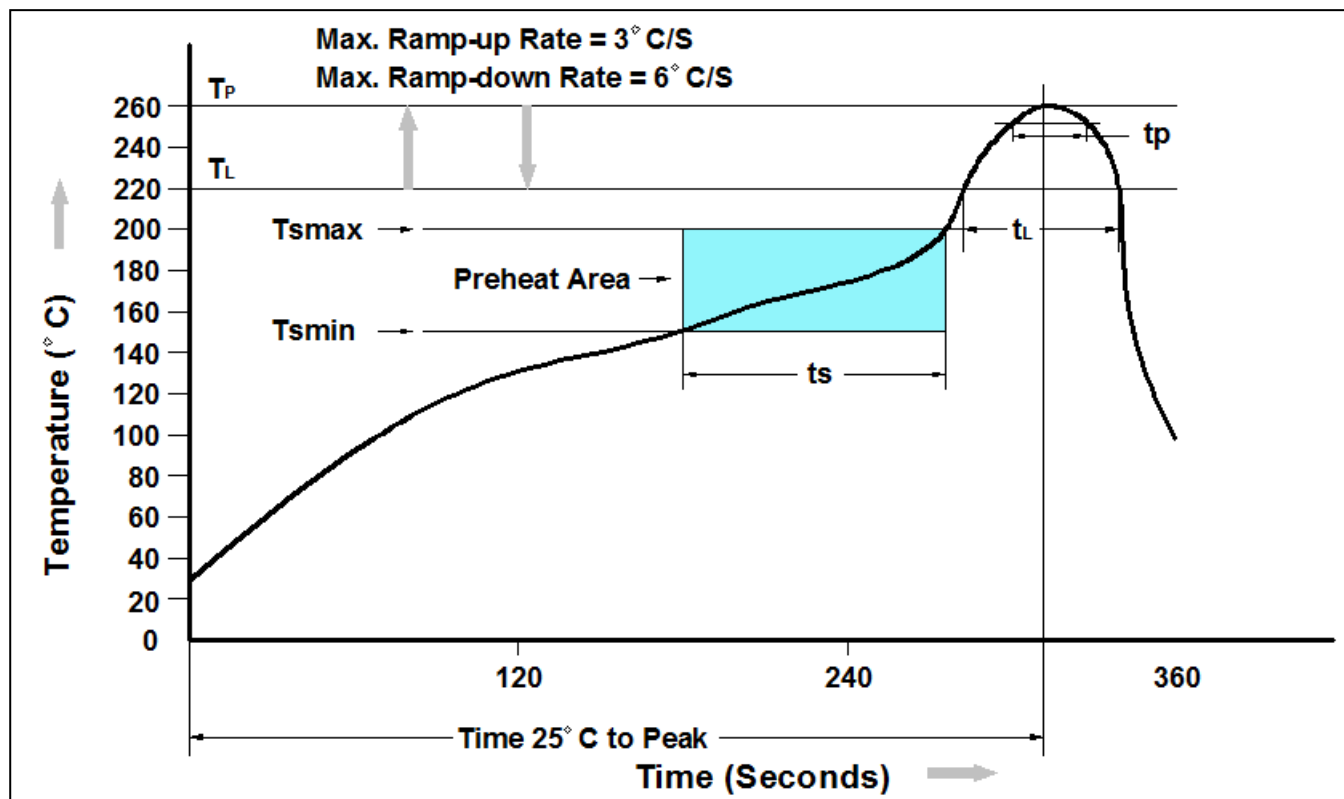


Fig.6 Typical Forward Characteristic



➤ Recommand IR Reflow Soldering Thermal Profile

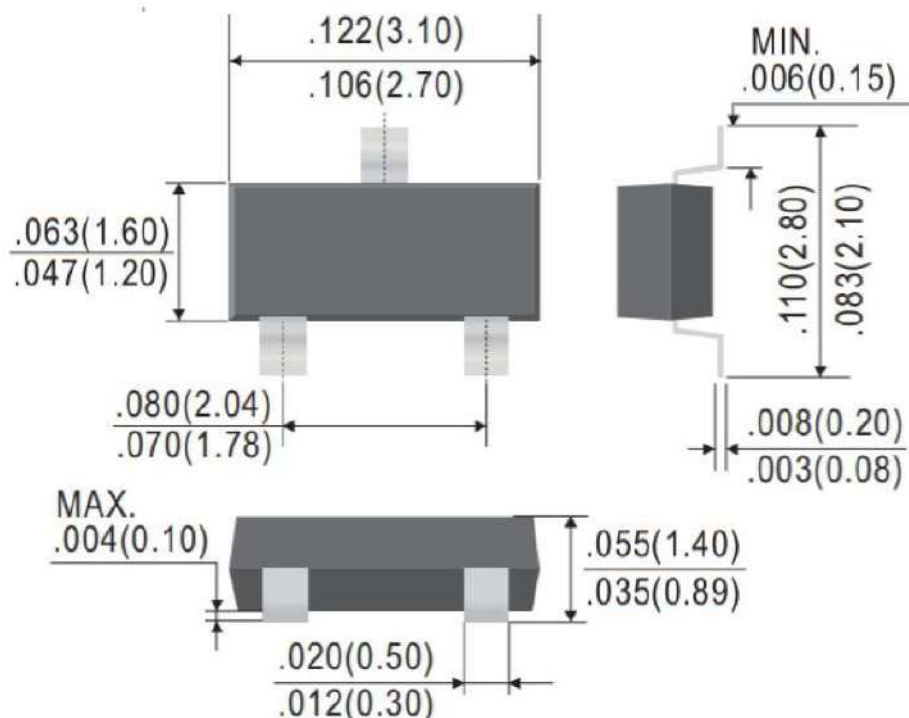


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Average Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➤ Ordering Information

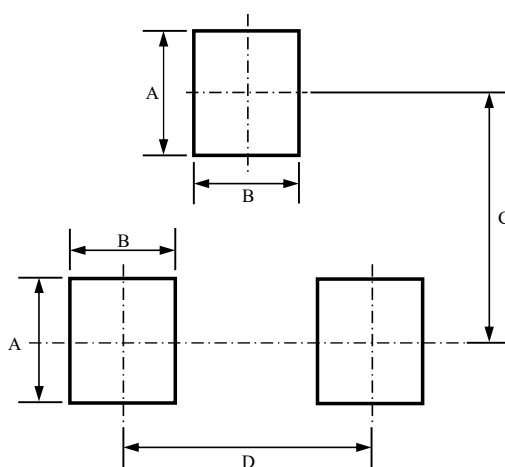
Part Number	Description	Quantity
PAP6004N	SOT-23 Reel	3000 pcs

➤ Package Information (SOT-23)



Dimensions in inch and (millimeter)

➤ Suggested Solder Pad Layout



Unit :mm

PACKAGE	A	B	C	D
SOT-23	1.00	0.80	2.00	1.90

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