

**N-Ch 60V Fast Switching MOSFET**  
 **$V_{DS}=60V$ ,  $I_D=3.6A$ ,  $R_{DS(ON)}=70m\Omega$**

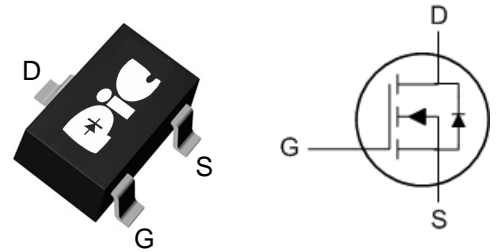
## ➤ General Description

This PAN6030N N-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 high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

## ➤ SOT-23



## ➤ Application

- Portable Equipment
- Battery Powered System
- Net Working System

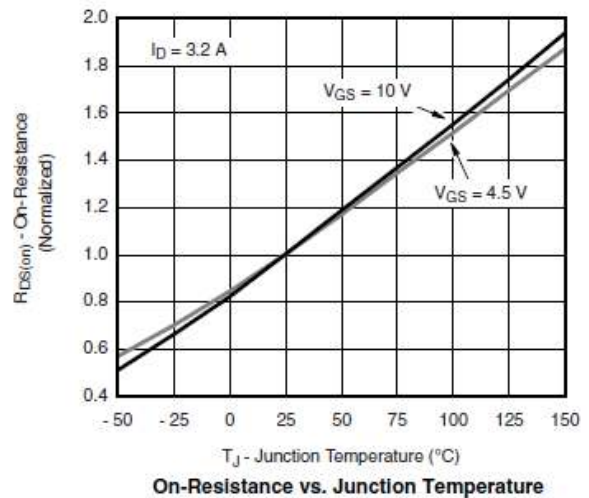
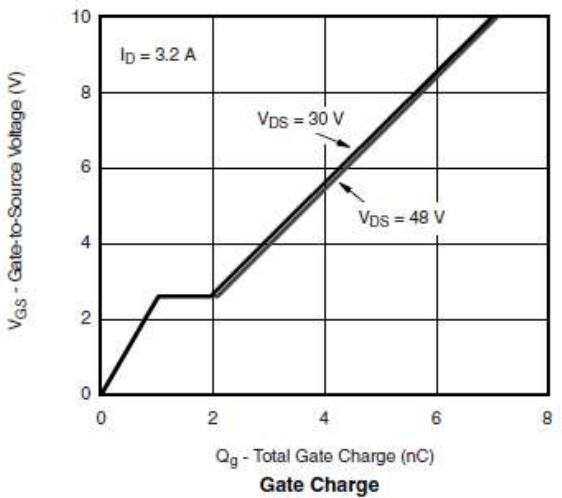
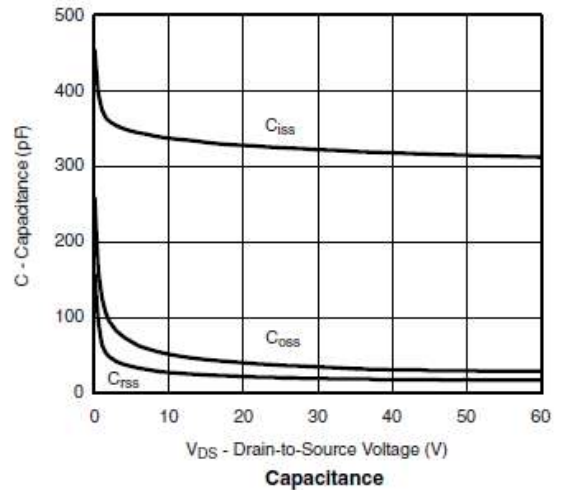
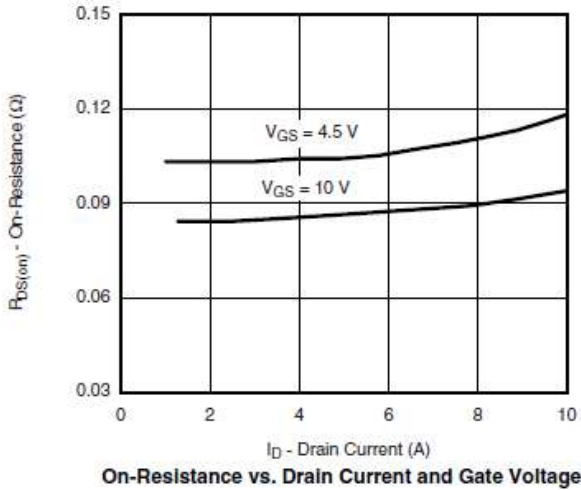
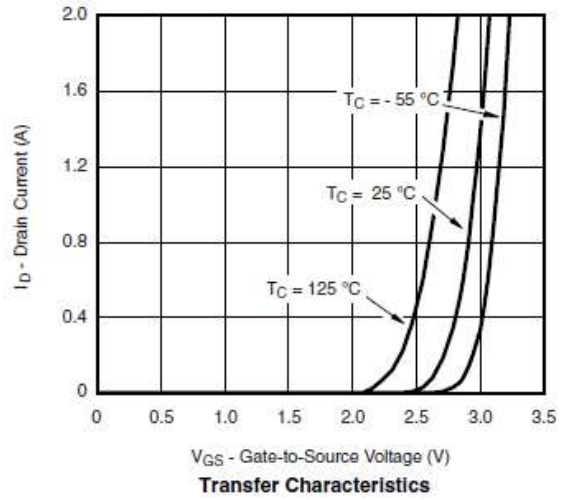
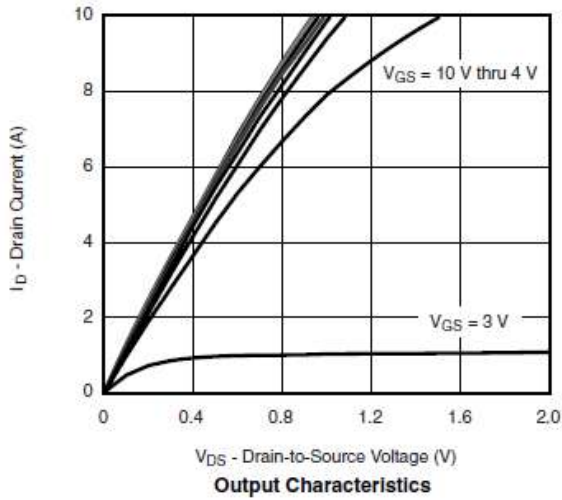
## ➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	60	V
Gate –Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current( $T_J=150^\circ C$ )	$I_D$	$T_A=25^\circ C$	3.6
		$T_A=70^\circ C$	2.8
Pulsed Drain Current	$I_{DM}$	10	A
Continuous Source Current(Diode Conduction)	$I_S$	1.6	A
Power Dissipation	$P_D$	$T_A=25^\circ C$	1.25
		$T_A=70^\circ C$	0.8
Operating Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55/150	$^\circ C$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	120	$^\circ C/W$

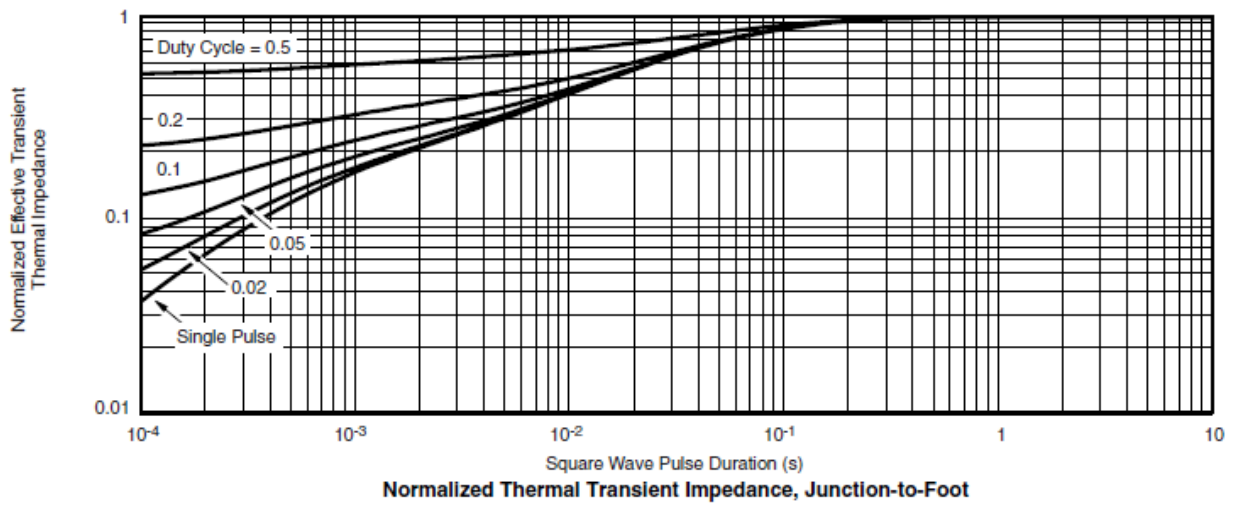
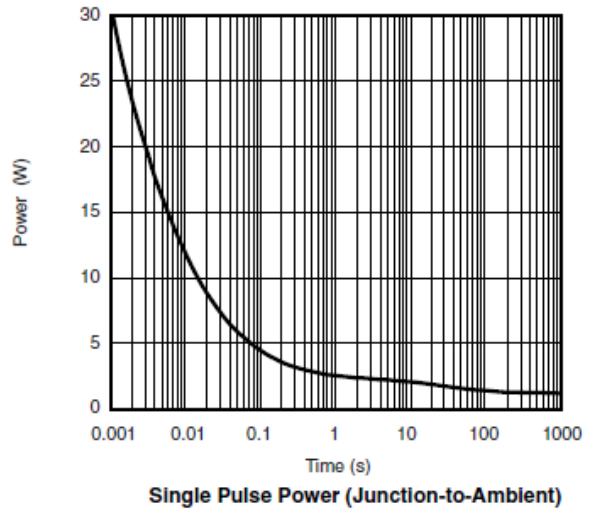
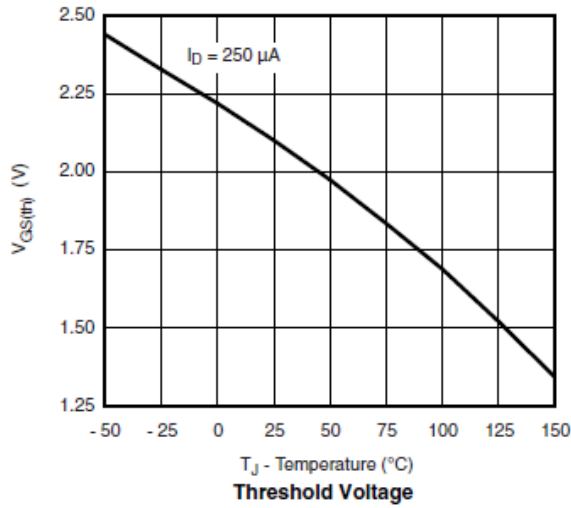
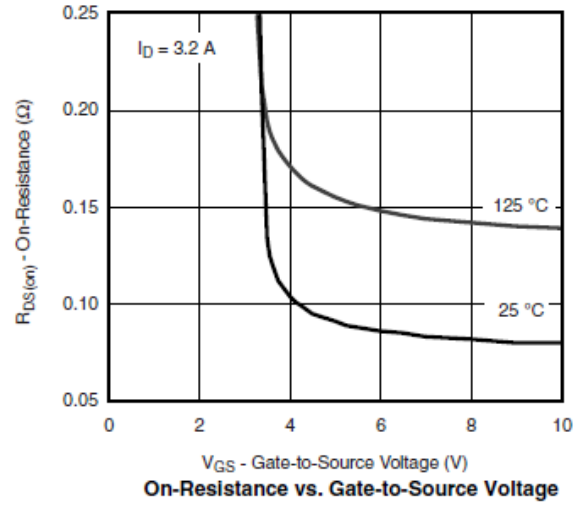
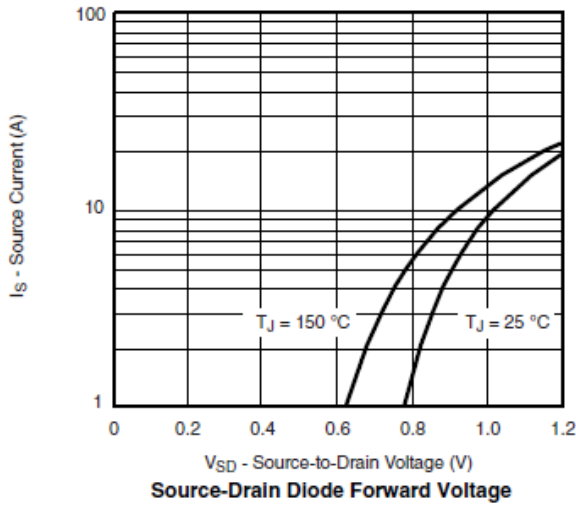
#### ➤ Electrical Characteristics ( $T_A=25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$			1	uA
		$V_{DS}=48V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$	6			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.6A$		55	70	m $\Omega$
		$V_{GS}=4.5V, I_D=2.8A$		60	78	
Forward Transconductance	$g_{FS}$	$V_{DS}=15V, I_D=3.2A$		15		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.5A, V_{GS}=0V$		0.85	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=4.5V$ $I_D=3.2A$		6	12	nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			1.2		
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V$ $f=1MHz$		400		pF
Output Capacitance	$C_{oss}$			40		
Reverse Transfer Capacitance	$C_{rss}$			20		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=12\Omega$ $I_D=2.5A, V_{GEN}=10V$ $R_G=1\Omega$		8	15	ns
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			25	40	
	$t_f$			10	20	

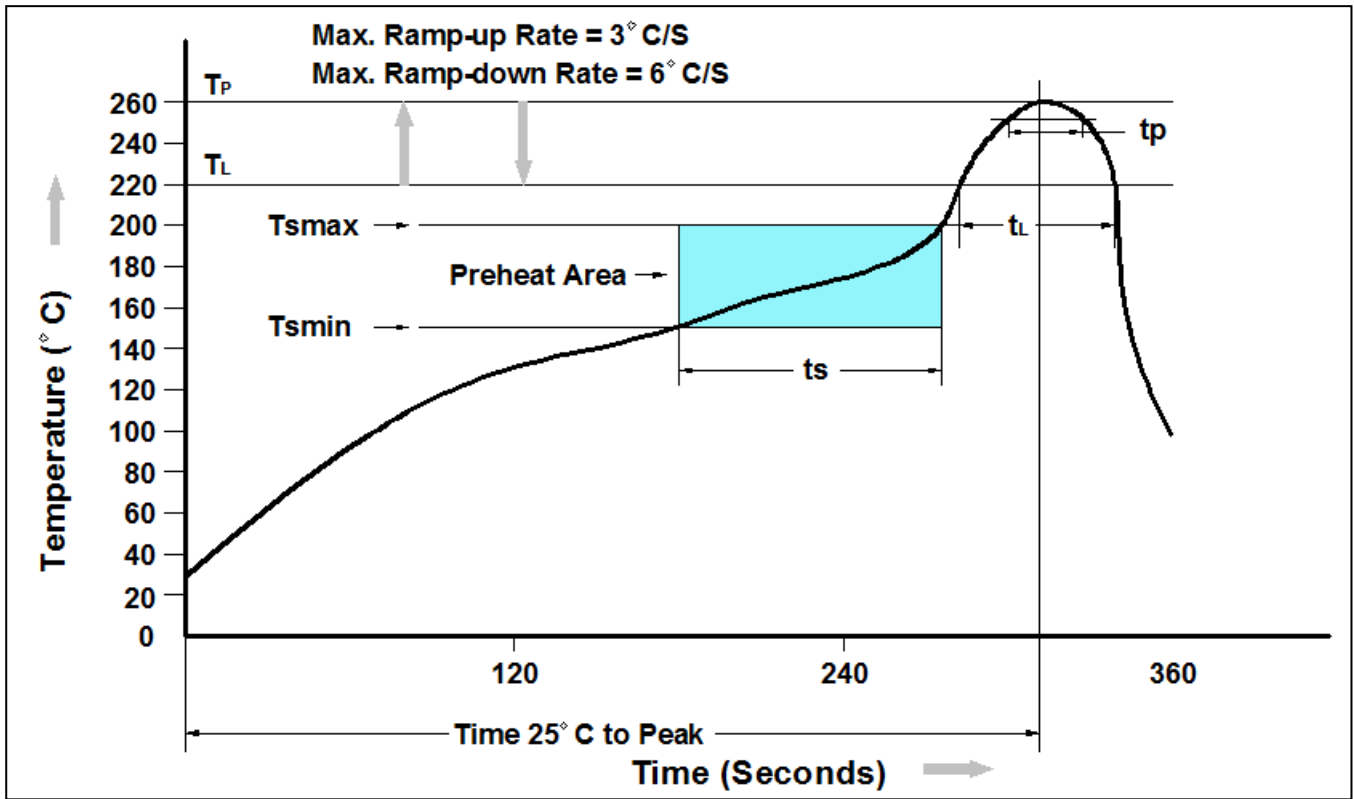
## ➤ Typical Characteristics



## N-Ch 60V Fast Switching MOSFET $V_{DS}=60V$ , $I_D=3.6A$ , $R_{DS(ON)}=70m\Omega$



➤ Recommnd IR Reflow Soldering Thermal Profile



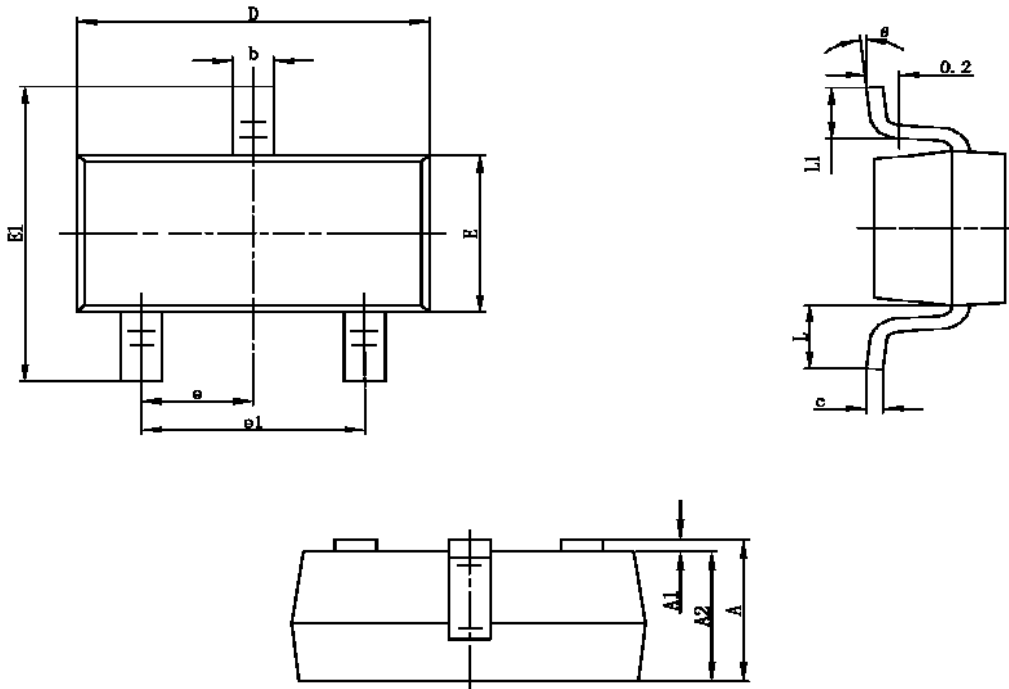
Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds
Average Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (T <sub>L</sub> )	217°C
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t <sub>P</sub> ) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➤ Ordering Information

Part Number	Description	Quantity
PAN6030N	SOT-23 Reel	3000 pcs

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➤ Package Information ( SOT-23 )



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°

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