

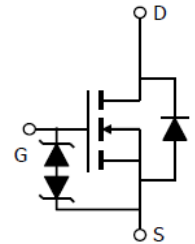
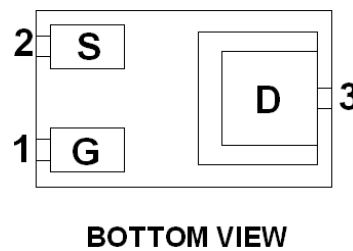
➤ General Description

This PAN6005EDN 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

- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- Low Battery Voltage Operation

➤ DFN1.0X0.6-3L



➤ Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate –Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^\circ C$)	I_D	$T_A=25^\circ C$	0.5
		$T_A=70^\circ C$	0.3
Pulsed Drain Current	I_{DM}	1.5	A
Continuous Source Current(Diode Conduction)	I_S	0.3	A
Power Dissipation	P_D	$T_A=25^\circ C$	0.27
		$T_A=70^\circ C$	0.16
Operating Junction Temperature	T_J	-55/150	$^\circ C$
Storage Temperature Range	T_{STG}	-55/150	$^\circ C$

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
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}	$V_{DS}=0V, V_{GS}=\pm 20V$			3	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
		$V_{DS}=60V, V_{GS}=0V$ $T_J=85^\circ C$			10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.5A$		1.2	1.8	Ω
		$V_{GS}=4.5V, I_D=0.05A$		1.6	2.0	
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=0.2A$		0.2		S
Diode Forward Voltage	V_{SD}	$I_S=0.2A, V_{GS}=0V$		0.75	1.4	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=0.25A$		500		μC
Gate-Source Charge	Q_{gs}			100		
Gate-Drain Charge	Q_{gd}			150		
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1MHz$		30		pF
Output Capacitance	C_{oss}			8		
Reverse Transfer Capacitance	C_{rss}			5		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=150\Omega$ $I_D=0.2A, V_{GEN}=-4.5V$ $R_G=10\Omega$		10	20	ns
	t_r			35	50	
Turn-Off Time	$t_{d(off)}$			20	30	
	t_f			40	60	

➤ Typical Characteristics

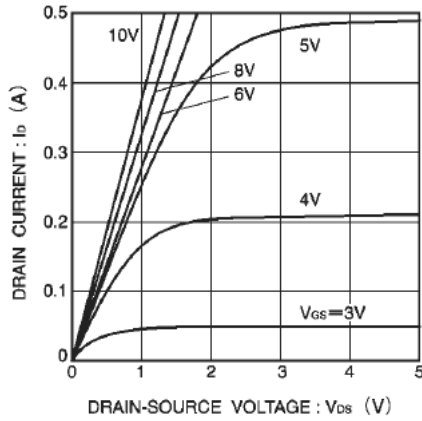


Fig.1 Typical output characteristics

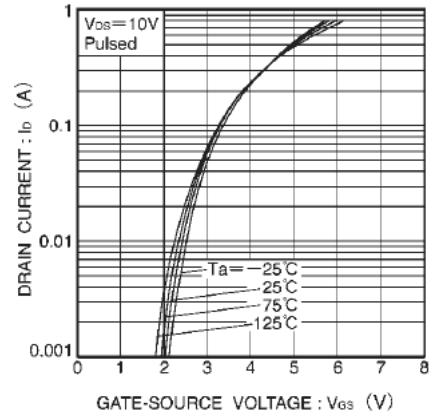


Fig.2 Typical transfer characteristics

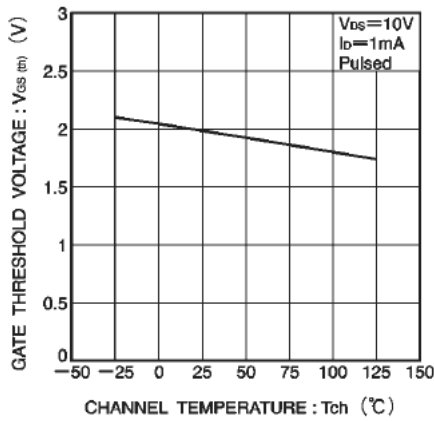


Fig.3 Gate threshold voltage vs. channel temperature

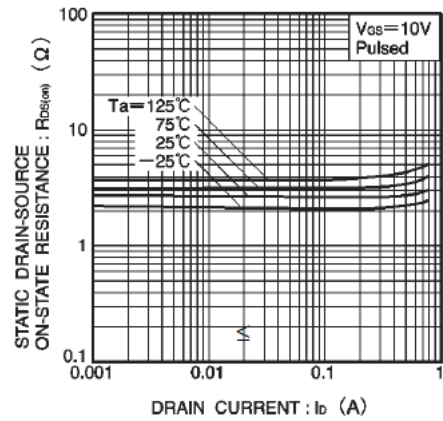


Fig.4 Static drain-source on-state resistance vs. drain current

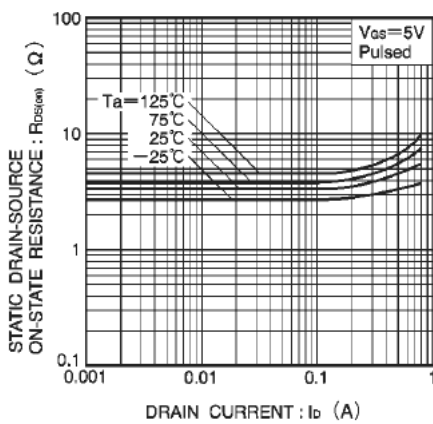


Fig.5 Static drain-source on-state resistance vs. drain current

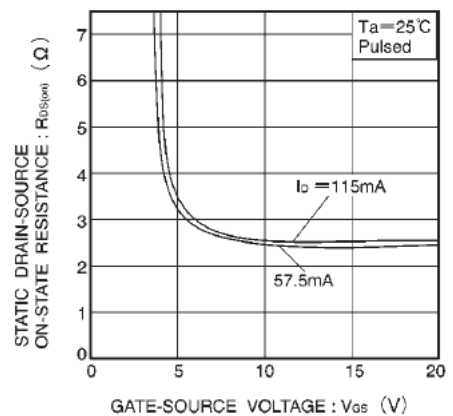


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

N-Ch 60V Fast Switching MOSFET
 $V_{DS}=60V, I_D=0.5A, R_{DS(ON)}=1800m\Omega$

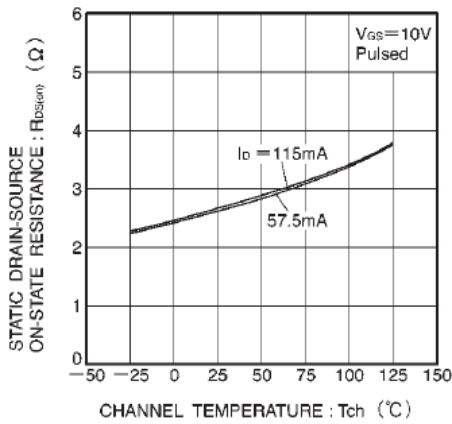


Fig.7 Static drain-source on-state resistance vs. channel temperature

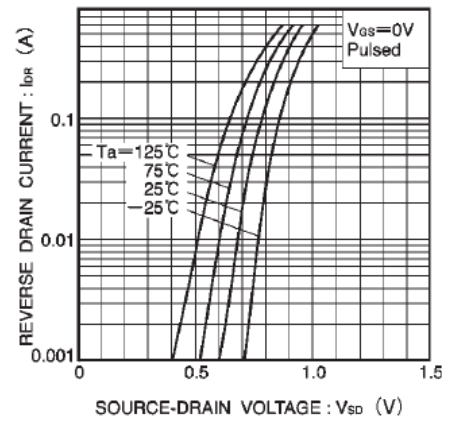


Fig.8 Reverse drain current vs. source-drain voltage

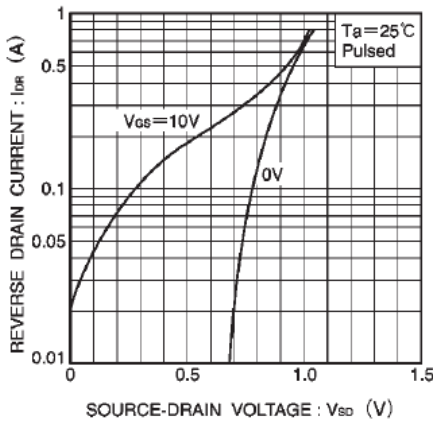


Fig.9 Reverse drain current vs. source-drain voltage

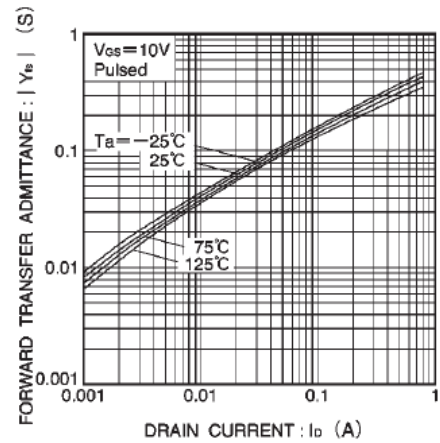


Fig.10 Forward transfer admittance vs. drain current

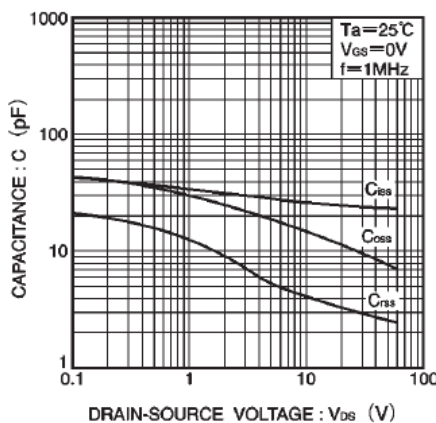


Fig.11 Typical capacitance vs. drain-source voltage

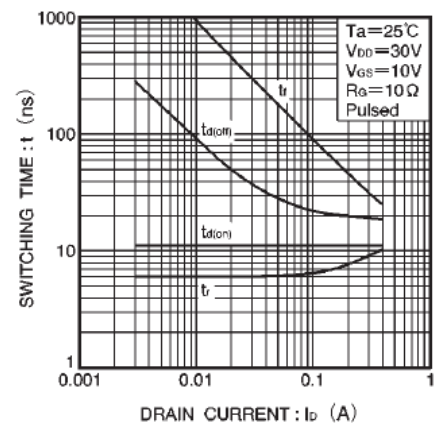
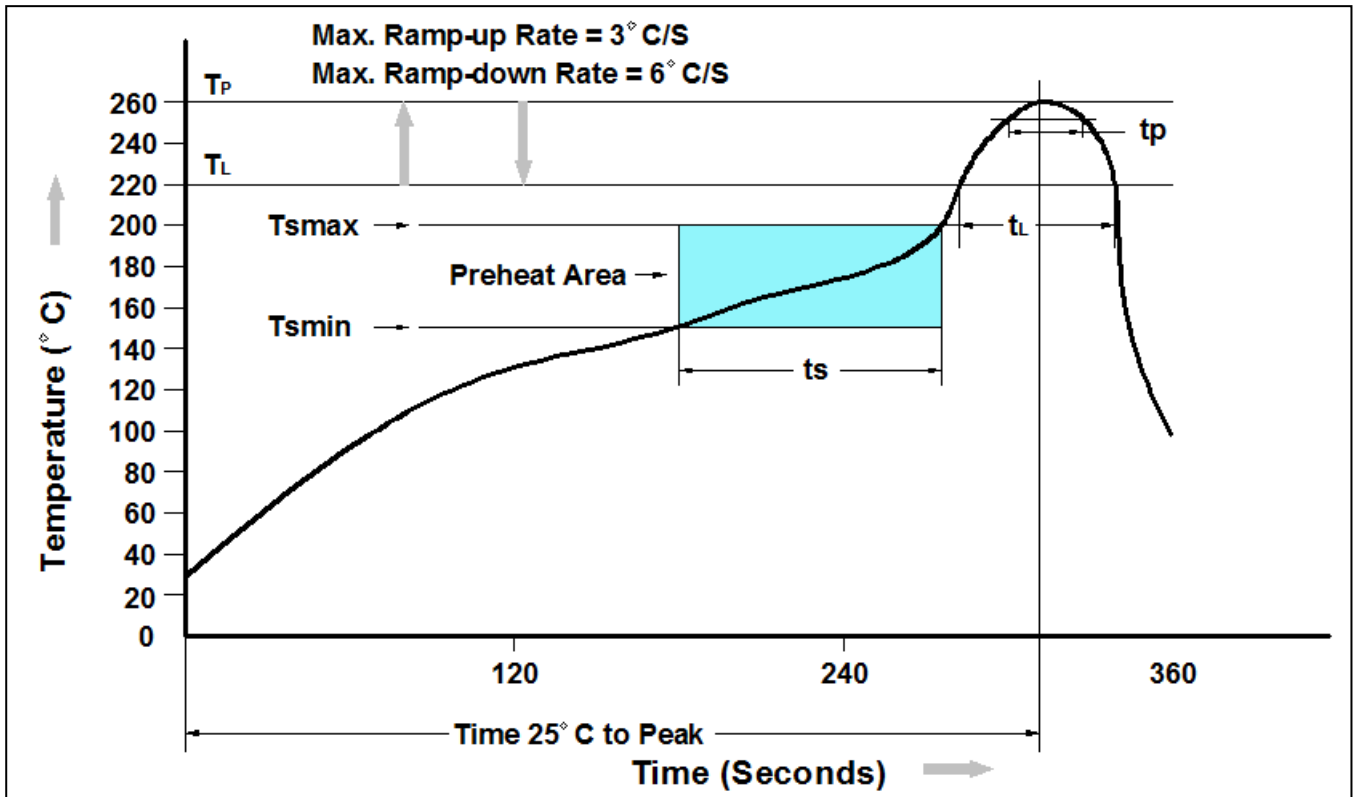


Fig. Switching characteristics

➤ Recommand IR Reflow Soldering Thermal Profile

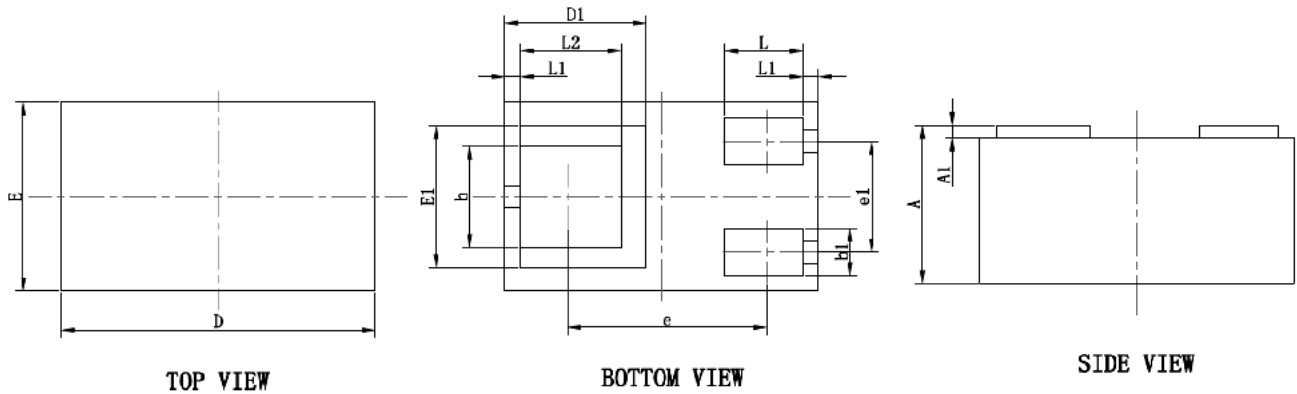


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
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
PAN6005EDN	DFN1.0X0.6-3L Reel	10,000 pcs

➤ Package Information (DFN1.0X0.6-3L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.100	0.000	0.004
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
D1	0.450REF.		0.018REF.	
E1	0.450REF.		0.018REF.	
b	0.270	0.370	0.011	0.015
b1	0.100	0.200	0.004	0.008
e	0.635REF.		0.025REF.	
e1	0.300	0.400	0.012	0.016
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	
L2	0.270	0.370	0.011	0.015

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