

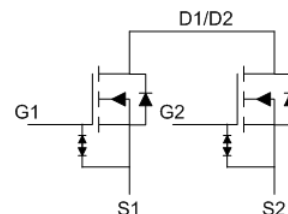
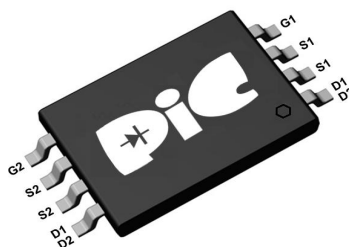
➤ General Description

This PAN27TE32JS Dual 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

- Small footprint and thin package
- Low drain-source ON resistance
- Low leakage current
- TSSOP-8 package design

➤ TSSOP-8



➤ Application

- Lithium Ion Battery Applications
- Notebook PC Applications
- Portable Equipment Applications

➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ₁	$I_D@T_A=25^{\circ}C$	7	A
Continuous Drain Current ₁	$I_D@T_A=70^{\circ}C$	5.6	A
Pulsed Drain Current ₂	I_{DM}	28	A
Total Power Dissipation ₃	$P_D@T_A=25^{\circ}C$	1.5	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$
Thermal Resistance Junction-ambient ₁	$R_{\theta JA}$	85	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	20	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=4.5V$, $I_D=3.5A$	14	15.5	18.5	$m\Omega$
		$V_{GS}=4.0V$, $I_D=3.5A$	14.5	17	19.5	
		$V_{GS}=3.7V$, $I_D=3.5A$	15	17.5	20	
		$V_{GS}=3.1V$, $I_D=3.5A$	16	19.5	23	
		$V_{GS}=2.5V$, $I_D=3.5A$	18	23.5	28.5	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	0.5	---	1.2	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16V$, $V_{GS}=0V$, $T_J=25^\circ C$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V$, $V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=5V$, $I_D=3.5A$	---	20	---	S
Total Gate Charge (4.5V)	Q_g	$V_{DS}=15V$, $V_{GS}=4.5V$, $I_D=7A$	---	11.3	---	nC
Gate-Source Charge	Q_{gs}		---	1.59	---	
Gate-Drain Charge	Q_{gd}		---	2.86	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=10V$, $V_{GS}=4.5V$, $R_G=3.3\Omega$, $I_D=3.5A$	---	5	---	ns
Rise Time	T_r		---	33.4	---	
Turn-Off Delay Time	$T_{d(off)}$		---	27	---	
Fall Time	T_f		---	8.8	---	
Input Capacitance	C_{iss}	$V_{DS}=15V$, $V_{GS}=0V$, $f=1MHz$	---	865	---	pF
Output Capacitance	C_{oss}		---	86	---	
Reverse Transfer Capacitance	C_{rss}		---	72	---	

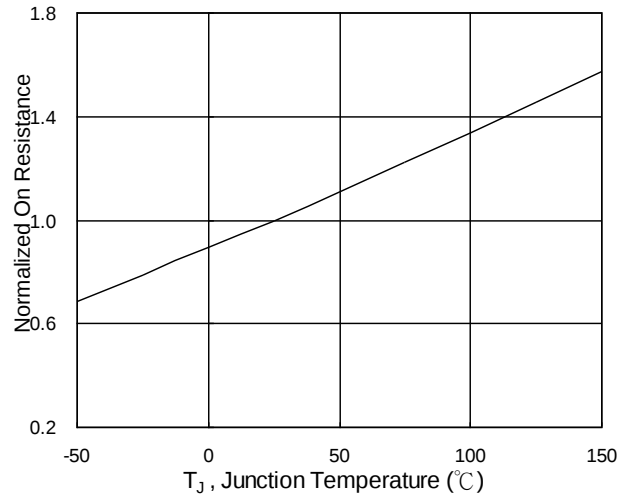
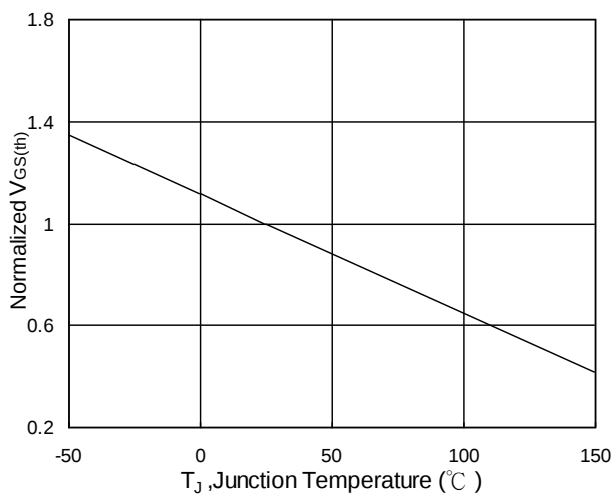
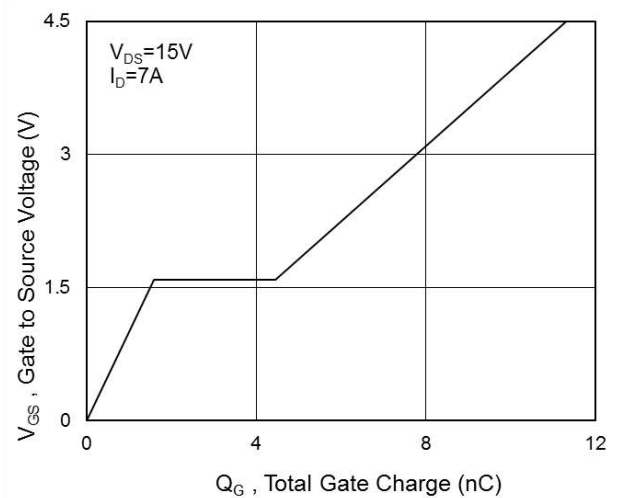
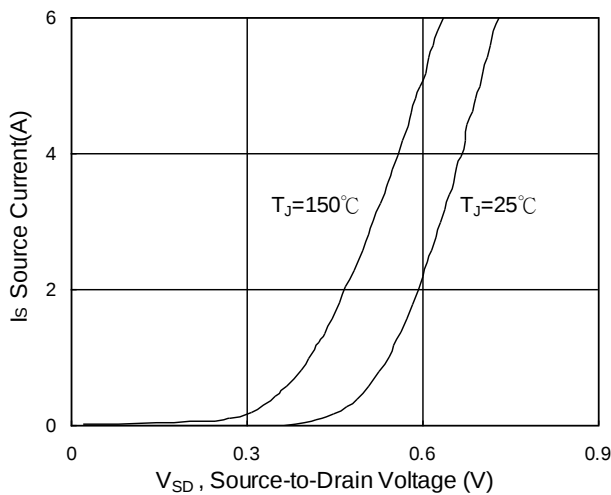
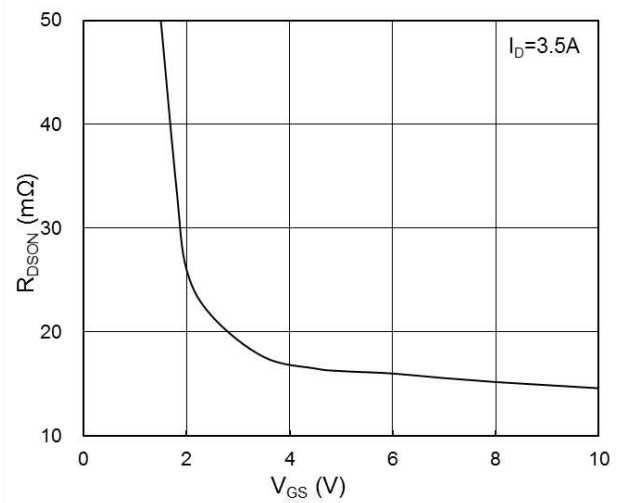
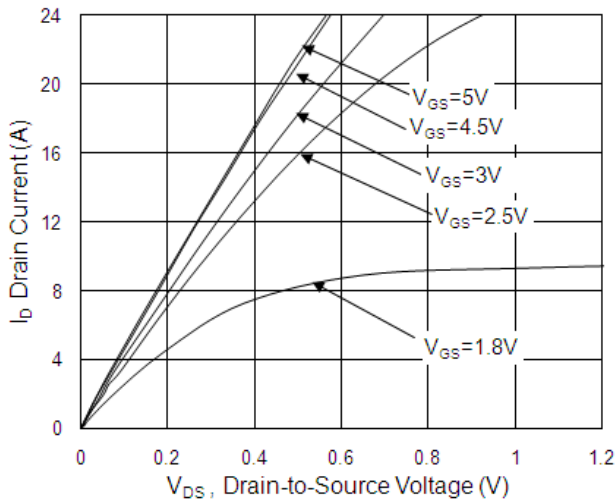
➤ Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current ^{1,4}	I_S	$V_G=V_D=0V$, Force Current	---	---	7	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V$, $I_S=1A$, $T_J=25^\circ C$	---	---	1.2	V

Note :

1. Pulse width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. Ensure that the channel temperature does not exceed $150^\circ C$.
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

➤ Typical Characteristics



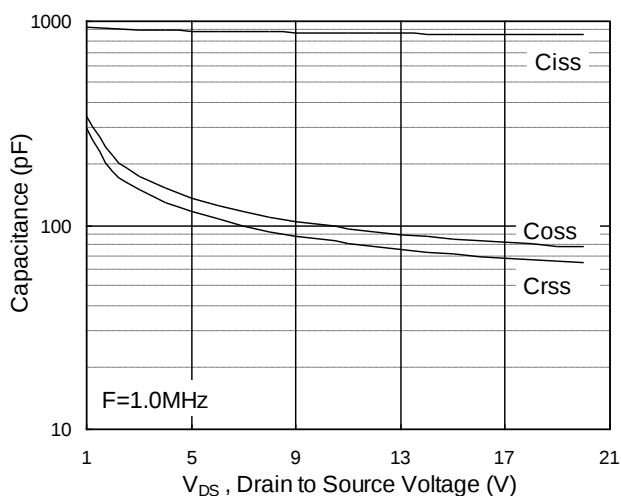


Fig.7 Capacitance

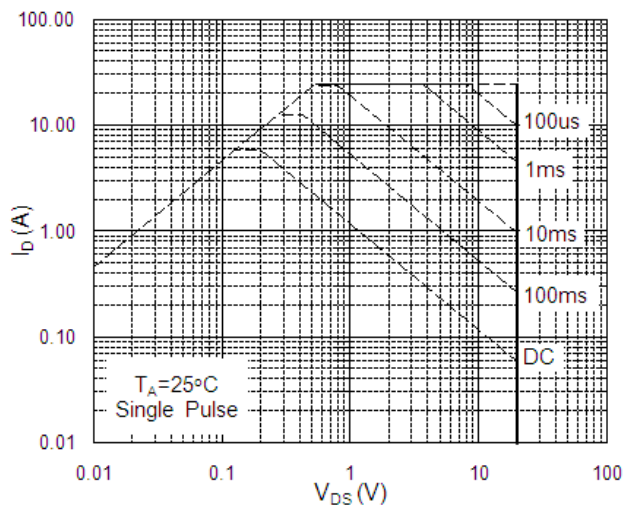


Fig.8 Safe Operating Area

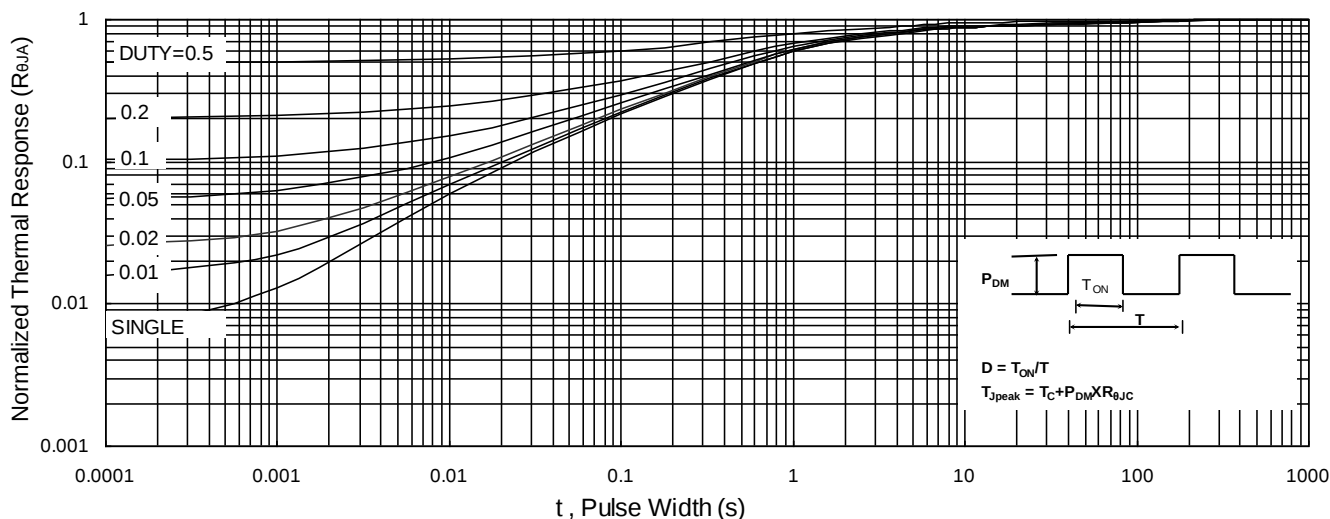


Fig.9 Normalized Maximum Transient Thermal Impedance

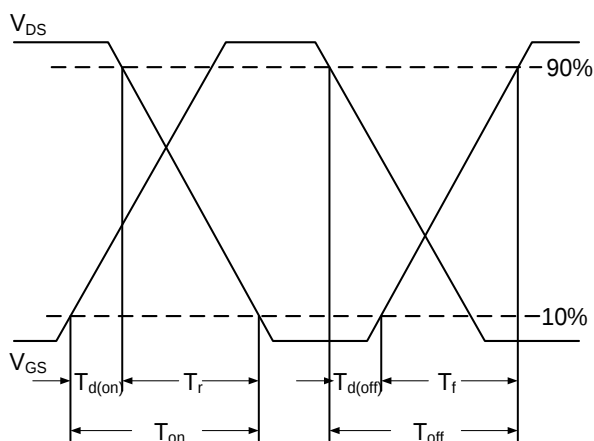


Fig.10 Switching Time Waveform

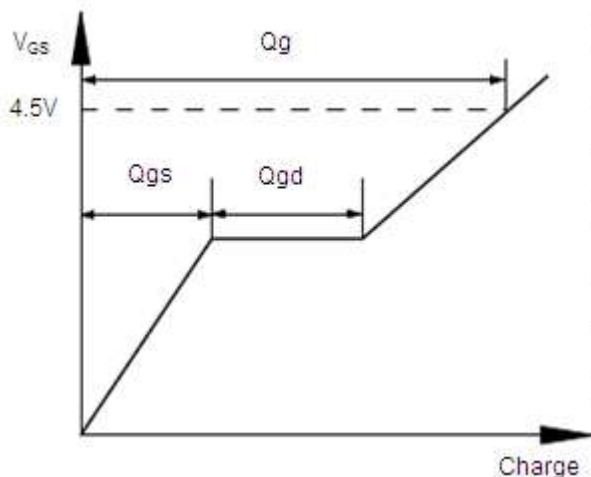
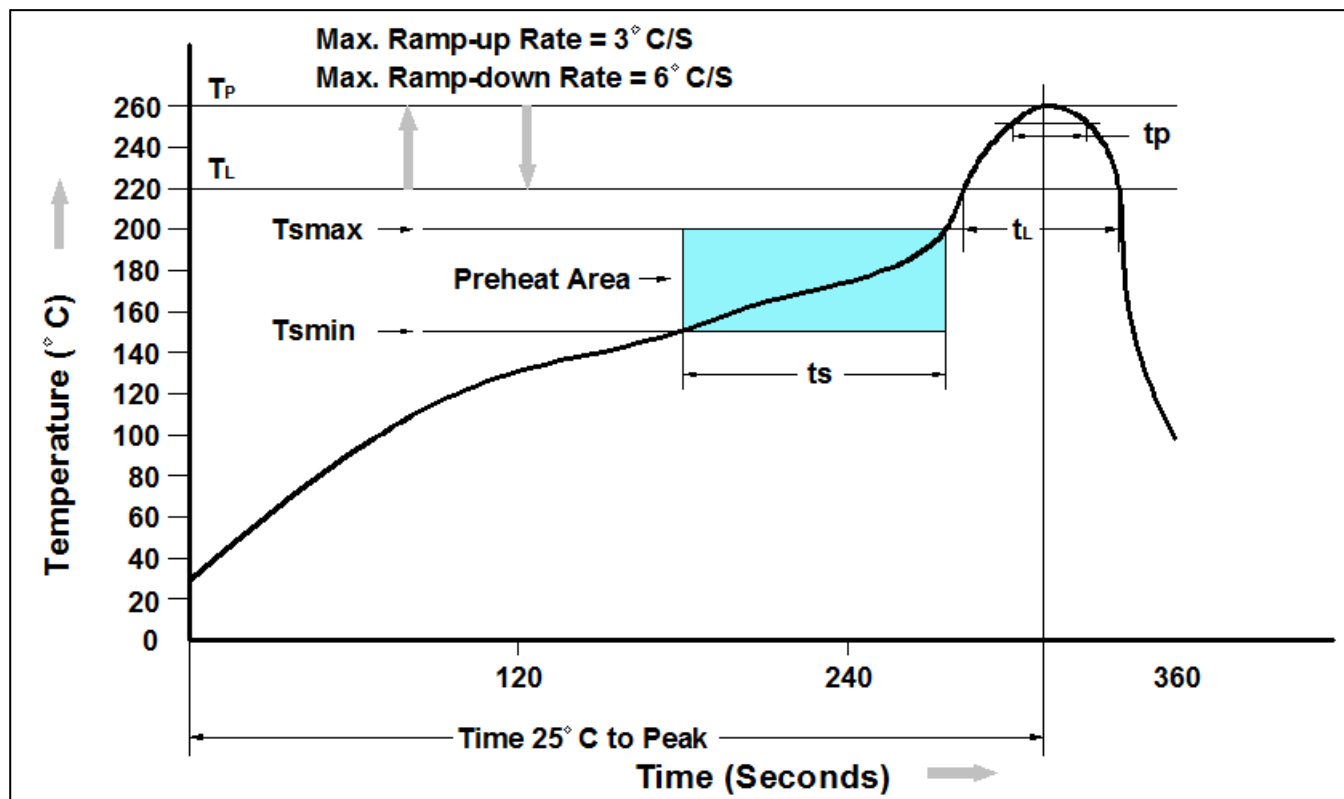


Fig.11 Gate Charge Waveform

➤ Recommend IR Reflow Soldering Thermal Profile

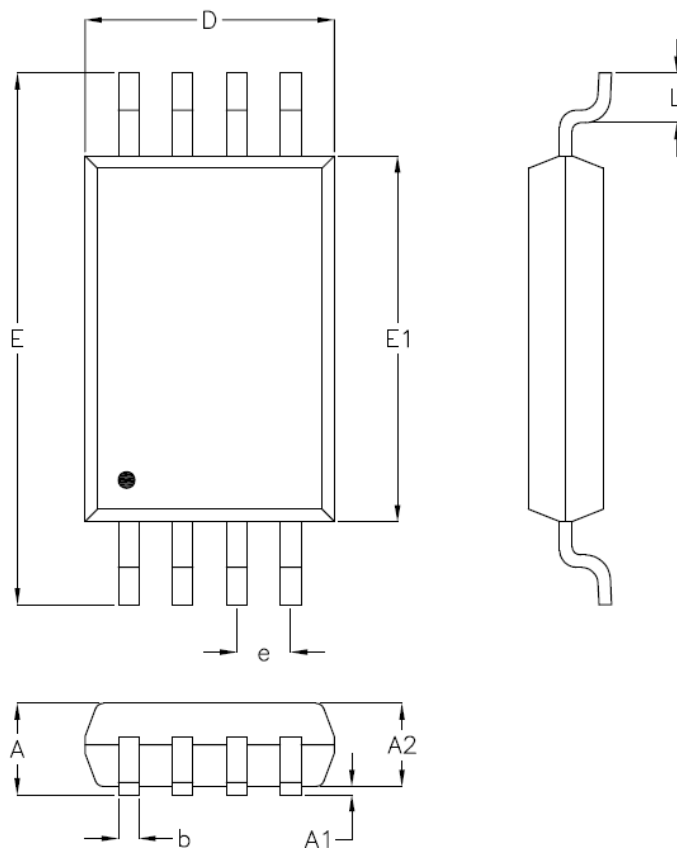


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{Smin})	150°C
Temperature Max. (T_{Smax})	200°C
Time (t_S) from (T_{Smin} to T_{Smax})	60-120 seconds
Average Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak 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
PAN27TE32JS	TSSOP-8 Reel	3000 pcs

➤ Package Information (TSSOP-8)



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	1.20	---	0.047
A1	0.05	0.15	0.002	0.006
A2	0.80	1.05	0.031	0.041
b	0.19	0.30	0.007	0.012
D	2.90	3.10	0.114	0.122
e	0.065 BSC		0.026 BSC	
E	6.25	6.55	0.246	0.258
E1	4.30	4.50	0.169	0.177
L	0.45	0.75	0.018	0.030

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