

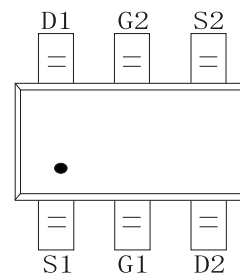
### ➤ General Description

This PAN7002KEH 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

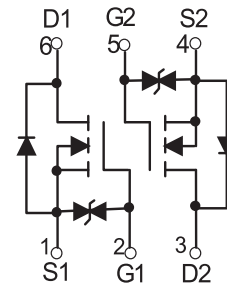
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protected
- Low Battery Voltage Operation
- SOT-363 package design

### ➤ SOT-363



### ➤ Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Load/Power Switching Smart Phones, Pagers
- PA Switch
- Level Switch



### ➤ Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source voltage	60	V
$V_{GS}$	Gate-Source voltage	$\pm 20$	V
$I_D$	Drain Current	300	mA
$P_D$	Power Dissipation	0.15	W
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	$^{\circ}C/W$

➤ **Electrical Characteristics (T<sub>A</sub>=25°C Unless otherwise noted)**

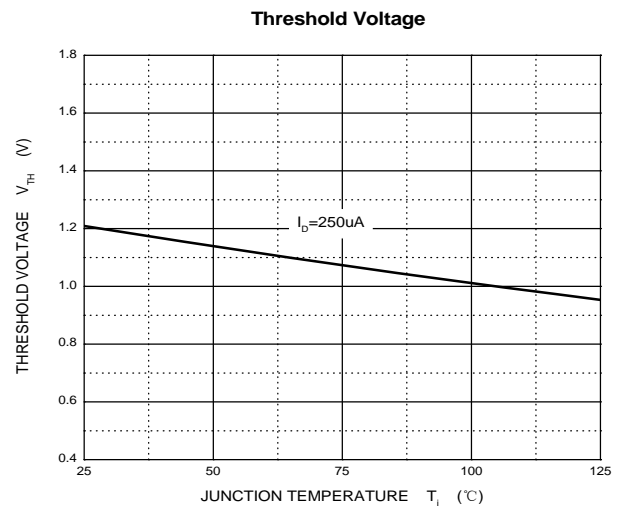
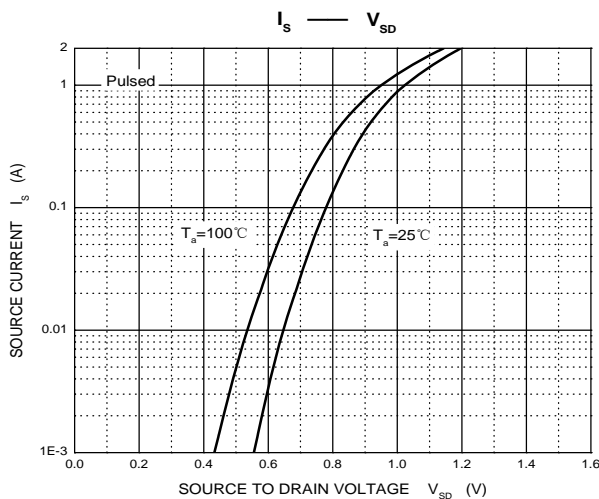
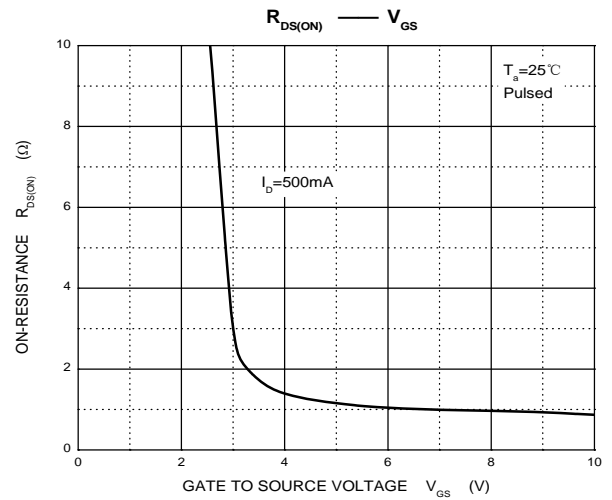
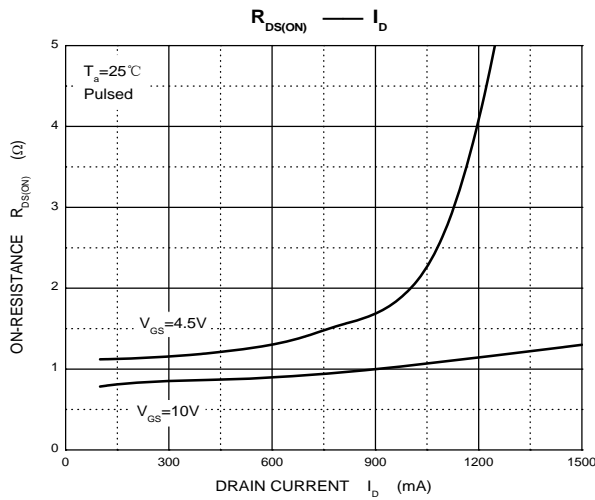
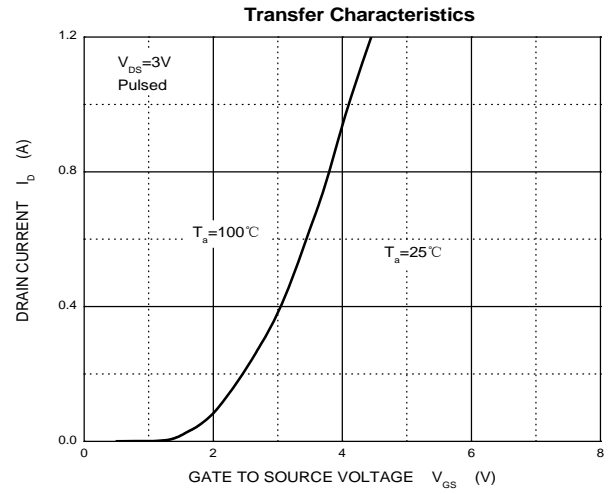
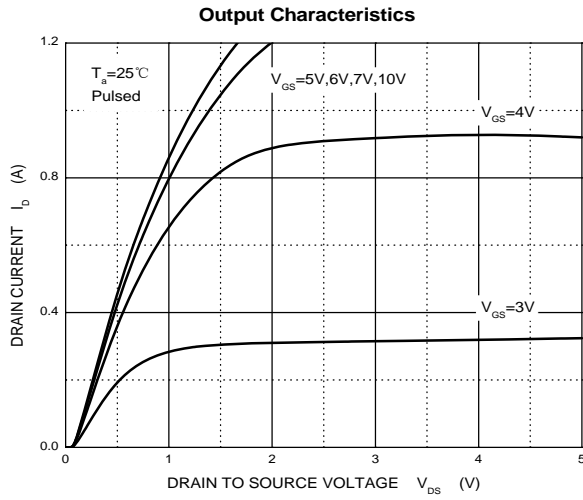
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60			V
Gate Threshold Voltage*	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =1mA	1	1.3	2.5	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =48V, V <sub>GS</sub> = 0V			1	μA
Gate –Source leakage current	I <sub>GSS1</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±10	μA
Drain-Source On-Resistance*	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> =200mA		1.1	5.3	Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =500mA		0.9	5	Ω
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA			1.5	V
Recovered charge	Q <sub>r</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA, V <sub>R</sub> =25V, dI <sub>S</sub> /dt=-100A/μs		30		nC
<b>Dynamic Characteristics**</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f =1MHz			40	pF
Output Capacitance	C <sub>oss</sub>				30	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				10	pF
<b>Switching Characteristics**</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V, R <sub>G</sub> =50Ω, R <sub>GS</sub> =50Ω, R <sub>L</sub> =250Ω			10	ns
Turn-Off Delay Time	t <sub>d(off)</sub>				15	ns
Reverse recovery Time	t <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =300mA, V <sub>R</sub> =25V, dI <sub>S</sub> /dt=-100A/μs		30		ns
<b>GATE-SOURCE ZENER DIODE</b>						
Gate-Source Breakdown Voltage	BV <sub>GSO</sub>	I <sub>GS</sub> =±1mA (Open Drain)	±21.5		±30	V

**Notes :**

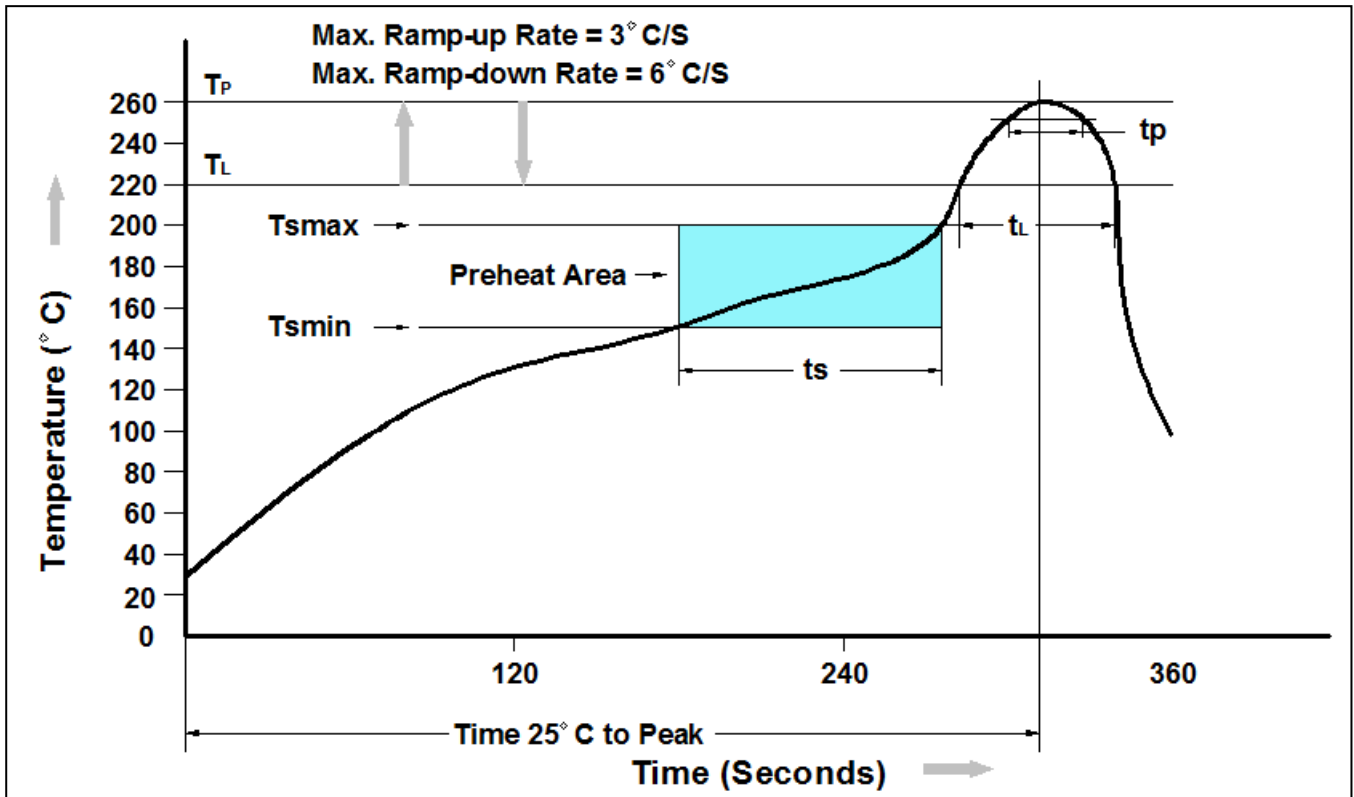
\*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%.

\*\*These parameters have no way to verify.

### ➤ Typical Characteristics



### ➤ Recommand IR Reflow Soldering Thermal Profile

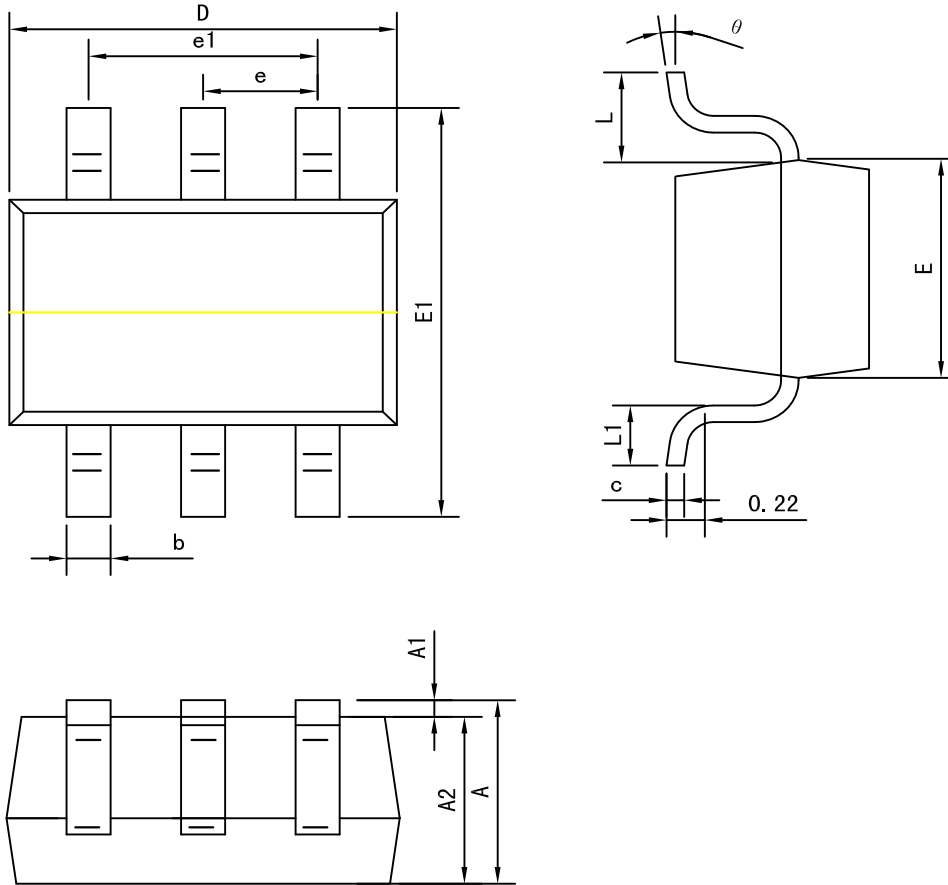


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds
Average Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (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
PAN7002KEH	SOT-363 Reel	3000 pcs

### ➤ Package Information ( SOT-363 )



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP	
e1	1.200	1.400
L	0.525 REF	
L1	0.260	0.460
$\theta$	0°	8°

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