

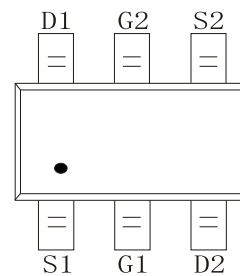
➤ General Description

This PAN7002KDWH 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

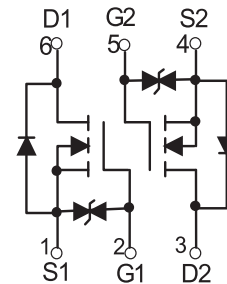
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protected to 2KV
- Low Battery Voltage Operation
- SOT-363 package design
- Suffix "H" indicates Halogen-free parts, ex. PAN7002KDWH

➤ 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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Continuous)	I_D	300	mA
Drain Current (Pulse Width $\leq 10 \mu s$)	I_{DM}	1.2	A
Total Power Dissipation (Note 1)	P_{tot}	295	mW
(Note 2)		350	
Thermal Resistance from Junction to Ambient (Note1)	$R_{\theta JA}$	423	$^{\circ}C/W$
(Note2)		357	
Operating and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^{\circ}C$

Note:

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
2. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain 1 cm².

➤ **Electrical Characteristics (T_A=25°C Unless otherwise noted)**

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Volta	$I_D=10\mu A$	BV_{DSS}	60	-	-	V
Zero Gate Voltage Drain Current	$V_{DS}=60V$	I_{DSS}	-	-	1	μA
Gate Source Leakage Current	$V_{GS}=\pm 20V$	I_{GSS}	-	-	± 10	μA
Gate Threshold Voltage	$V_{DS}=10V$, $I_D=250\mu A$	$V_{GS(th)}$	1.10	-	1.75	V
Static Drain Source On-Resistance	$V_{GS}=10V$, $I_D=500mA$	$R_{DS(ON)}$	-	-	3	Ω
	$V_{GS}=5V$, $I_D=50mA$		-	-	4	
Forward Transconductance	$V_{DS}=10V$, $I_D=200mA$	g_{FS}	80	-	-	mS
Dynamic						
Gate Resistance	$V_{DS}=0V$, $V_{GS}=0$, $f=1MHz$	R_g	-	200	-	Ω
Total Gate Charge	$V_{DS}=10V$, $I_D=0.5A$, $V_{GS}=4.5V$	Q_g	-	0.44	-	nC
Gate-Source Charge		Q_{gs}	-	0.20	-	
Gate-Drain Charge		Q_{gd}	-	0.10	-	
Input Capacitance	$V_{GS}=0V$, $V_{DS}=25V$, $f=1MHz$	C_{iss}	-	21.00	-	pF
Output Capacitance		C_{oss}	-	12.00	-	
Reverse Transfer Capacitance		C_{rss}	-	0.35	-	
Turn-On Delay Time	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=0.5A$, $R_g=25\Omega$	$t_{d(on)}$	-	2.7	-	ns
Turn-On Rise Time		t_r	-	2.5	-	
Turn-Off Delay Time		$t_{d(off)}$	-	13.0	-	
Turn-Off Fall Time		t_f	-	8.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	$V_{GS}=0V$, $I_S=0.5A$	V_{SD}	-	0.85	-	V
Reverse Recovery Time	$I_S=0.5A$, $di/dt=100A/\mu s$	t_{rr}	-	30	-	ns
Reverse Recovery Charge		Q_{rr}	-	29	-	nC

➤ Typical Characteristics

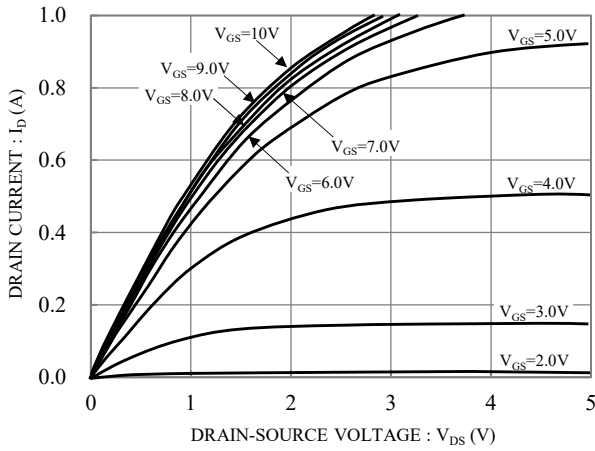


Fig.1 Typical Output Characteristics

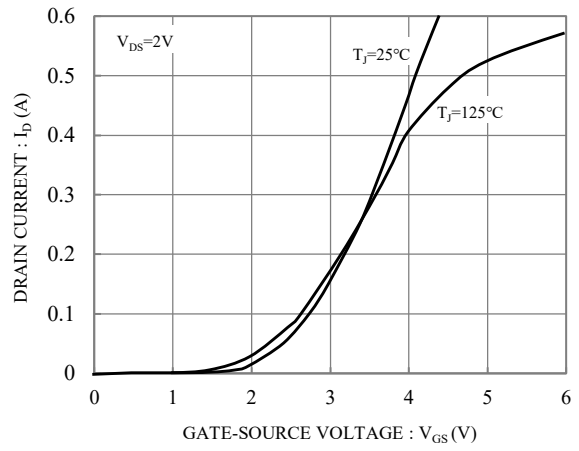


Fig.2 Typical Transfer Characteristics

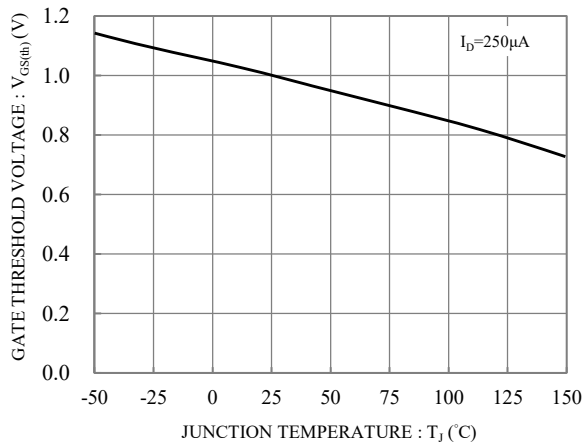


Fig.3 Gate Threshold Voltage vs. Junction Temperature

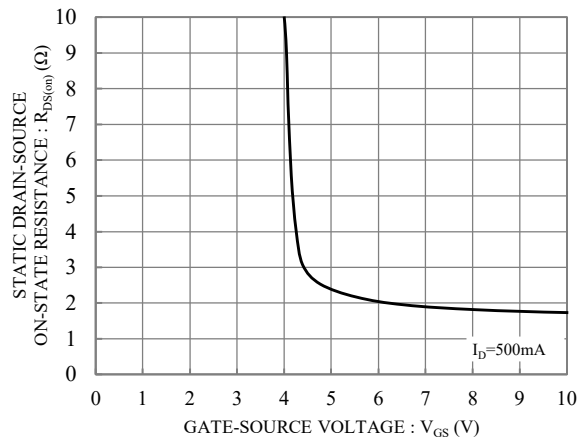


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

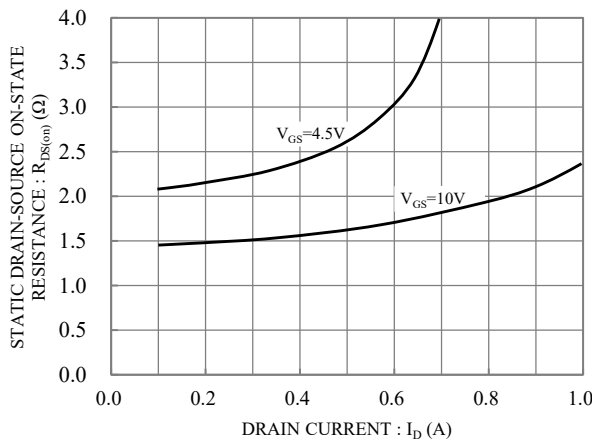


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

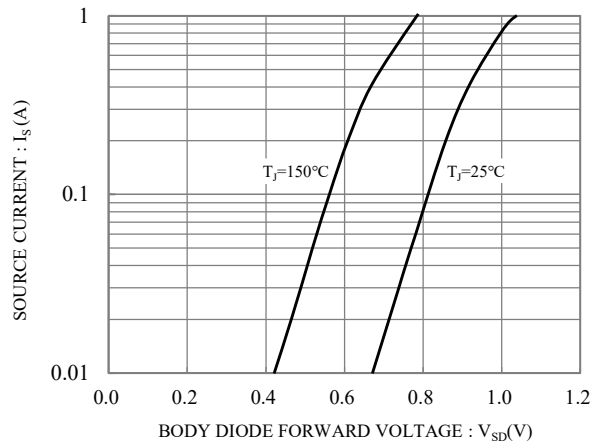


Fig.6 Body Diode Forward Voltage vs. Source Current

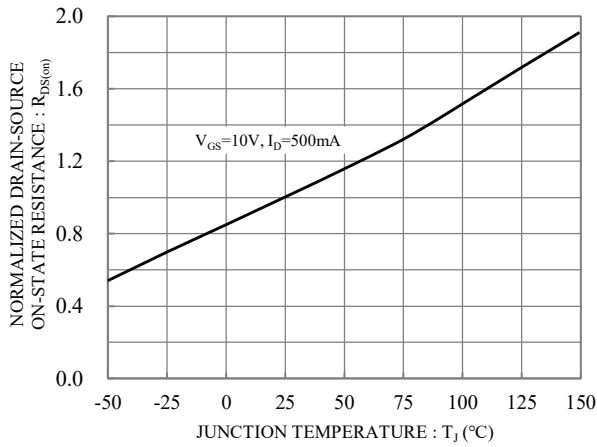


Fig.7 Drain-Source On-State Resistance vs. Junction Temperature

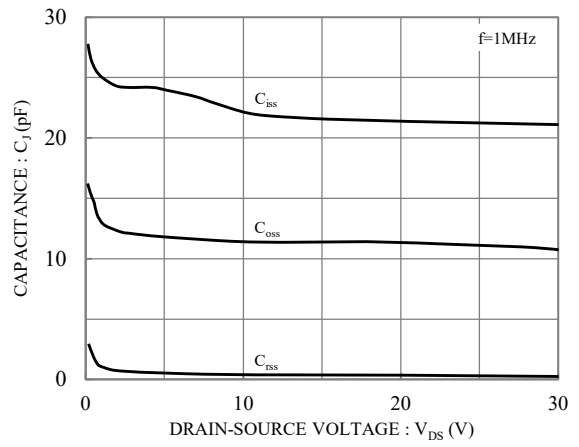


Fig.8 Capacitance vs. Drain-Source Voltage

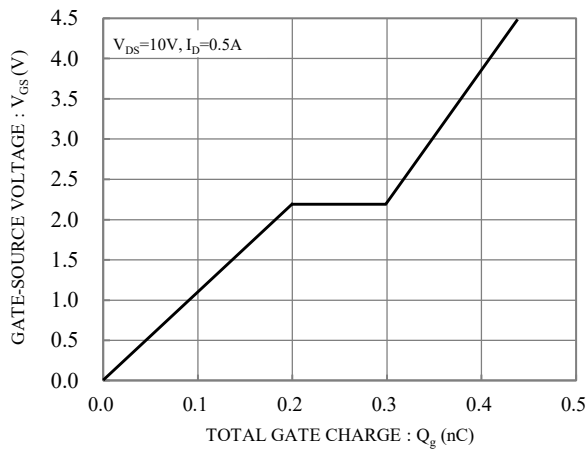
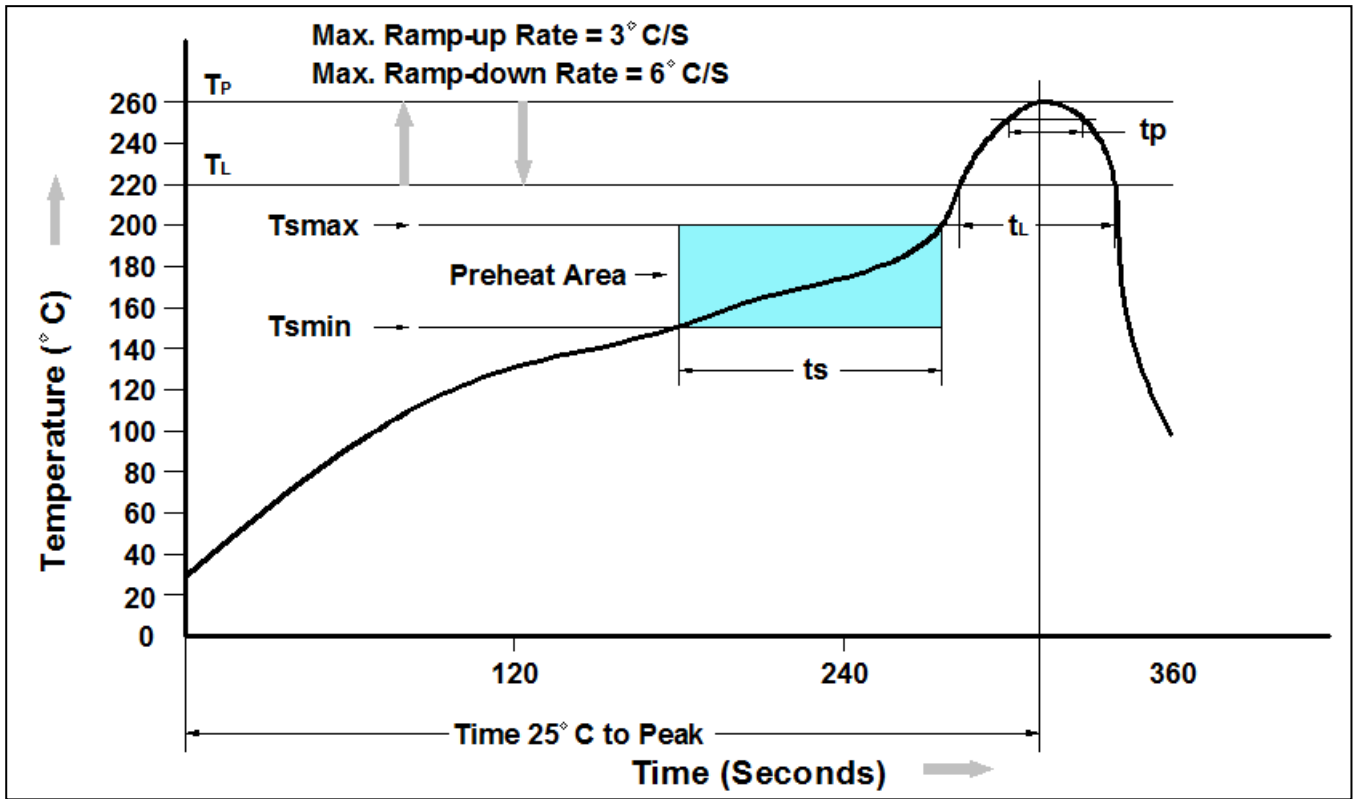


Fig.9 Gate Charge Characteristics

➤ Recommnd IR Reflow Soldering Thermal Profile

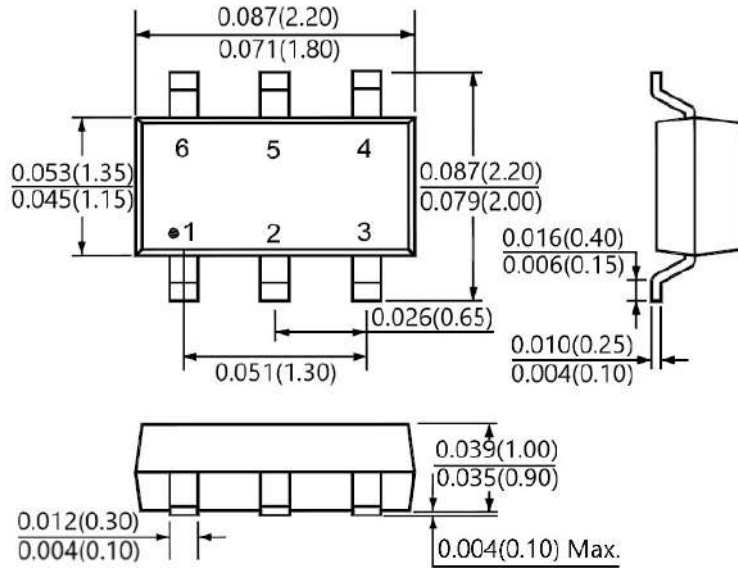


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds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

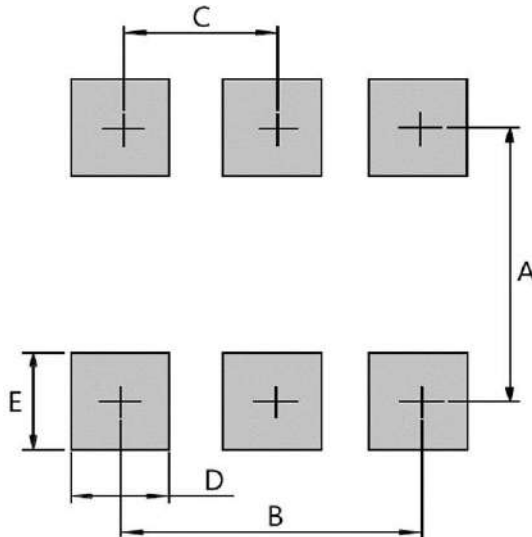
Part Number	Description	Quantity
PAN7002KDWH	SOT-363 Reel	3000 pcs

➤ Package Information (SOT-363)



Dimensions in inch and (millimeter)

➤ Suggested Solder Pad Layout



Unit : mm

PACKAGE	A	B	C	D	E
SOT-363	1.90	1.30	0.65	0.42	0.60

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