

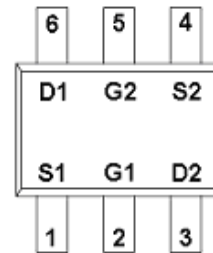
### ➤ General Description

This PAP3933H Dual P-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

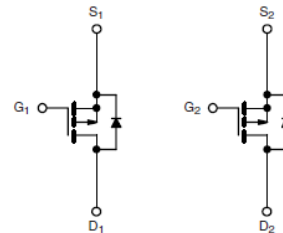
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-363 package design

### ➤ SOT-363



### ➤ Application

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



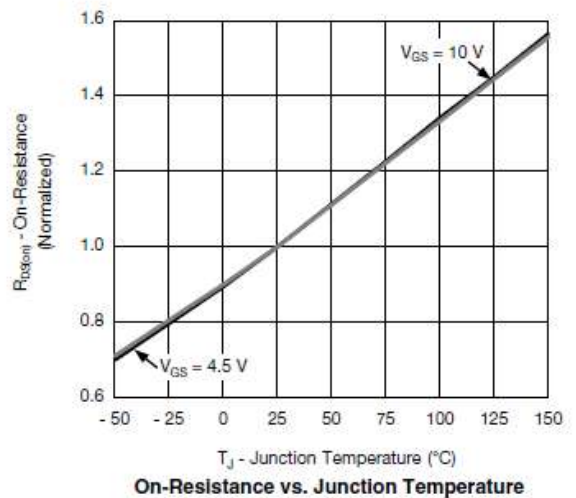
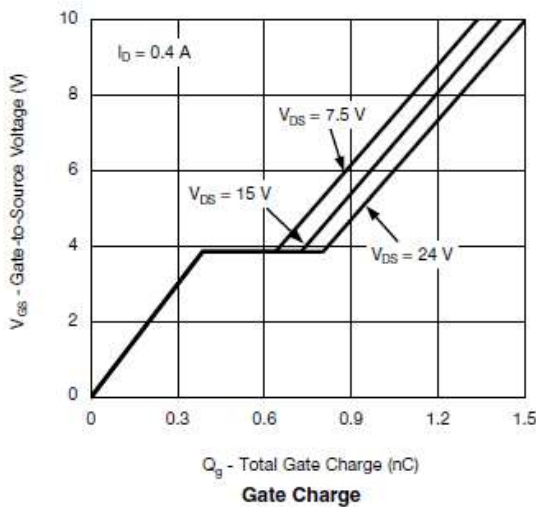
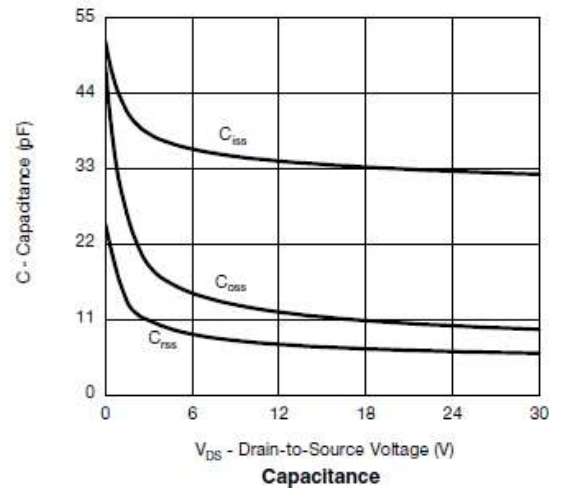
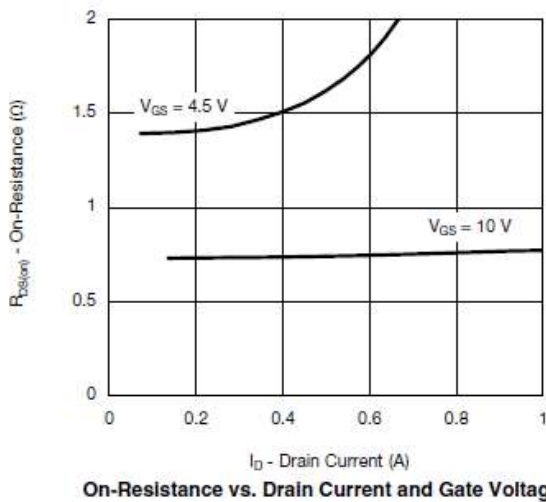
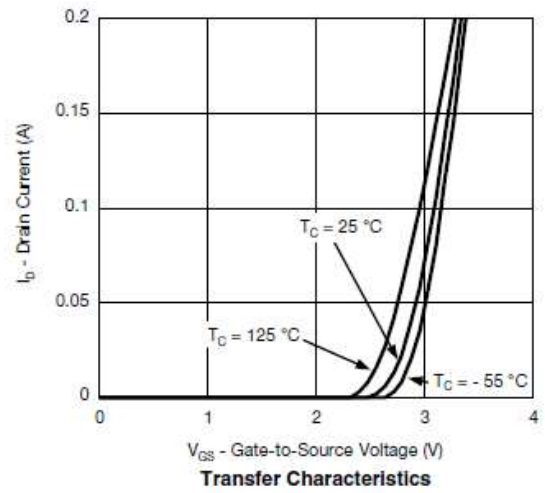
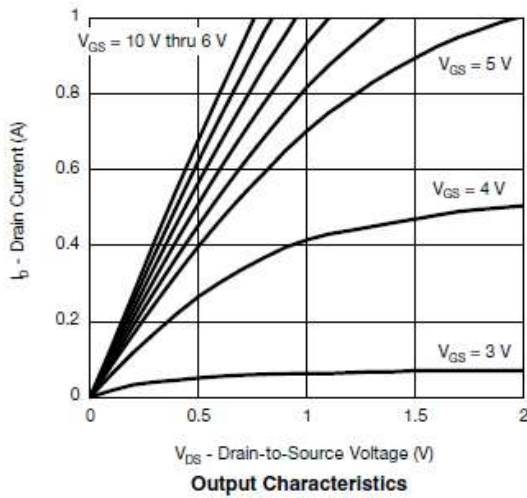
### ➤ Absolute Maximum Ratings

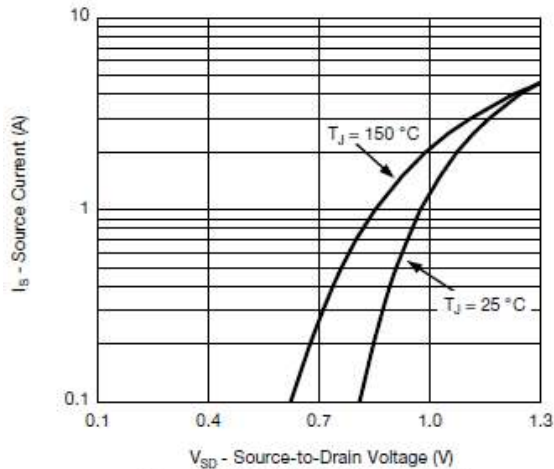
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DSS}$	-30	V
Gate -Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^{\circ}C$ )	$I_D$	$T_A=25^{\circ}C$	-0.55
		$T_A=70^{\circ}C$	-0.15
Pulsed Drain Current	$I_{DM}$	-1.0	A
Continuous Source Current(Diode Conduction)	$I_S$	-0.3	A
Power Dissipation	$P_D$	$T_A=25^{\circ}C$	0.3
		$T_A=70^{\circ}C$	0.2
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)**

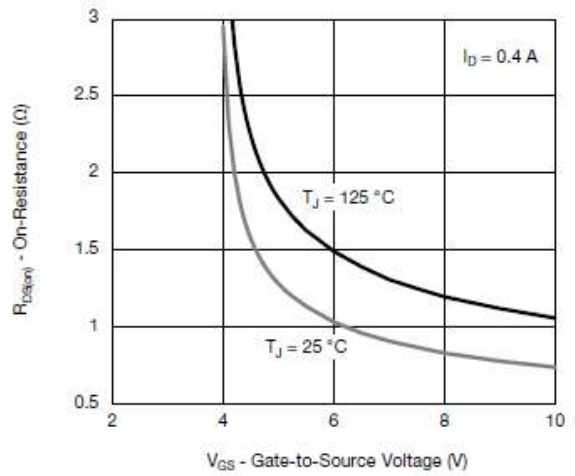
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.7		-1.5	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_J=85^\circ C$			-5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	0.5			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-0.55A$		650	900	m $\Omega$
		$V_{GS}=-4.5V, I_D=-0.35A$		800	1000	
		$V_{GS}=-2.5V, I_D=-0.15A$		1200	1800	
Forward Transconductance	$g_{FS}$	$V_{DS}=-15V, I_D=-0.5A$		1		S
Diode Forward Voltage	$V_{SD}$	$I_S=-0.15A, V_{GS}=0V$		0.65	1.3	V
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1MHz$		34		pF
Output Capacitance	$C_{oss}$			12		
Reverse Transfer Capacitance	$C_{rss}$			8		
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D \equiv -0.15A$		0.8	1.3	nC
Gate-Source Charge	$Q_{gs}$			0.4		
Gate-Drain Charge	$Q_{gd}$			0.4		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=38\Omega$ $I_D \equiv -0.15A, V_{GEN}=-4.5V$ $R_G=1\Omega$		35	50	ns
	$t_r$			20	30	
Turn-Off Time	$t_{d(off)}$			10	20	
	$t_f$			10	20	

### ➤ Typical Characteristics

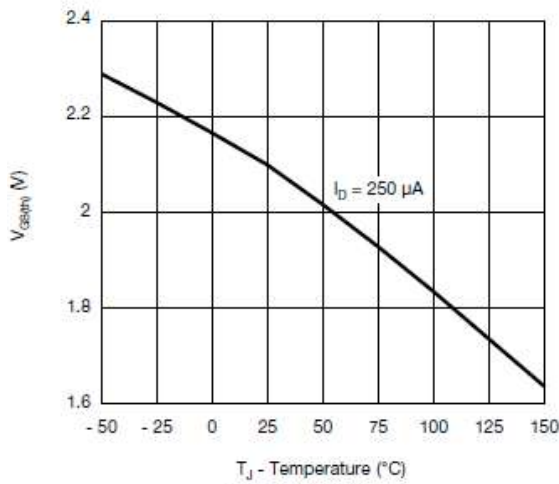




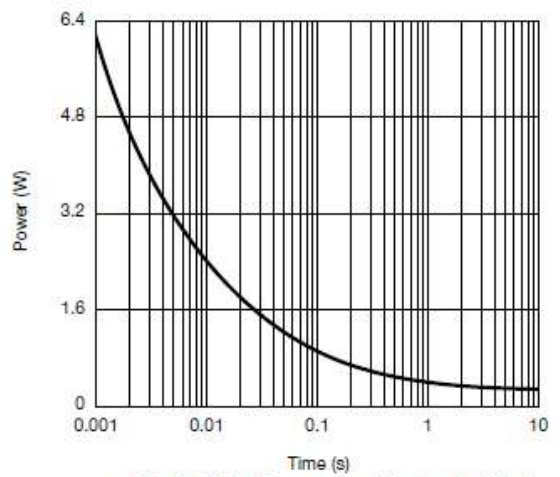
Source-Drain Diode Forward Voltage



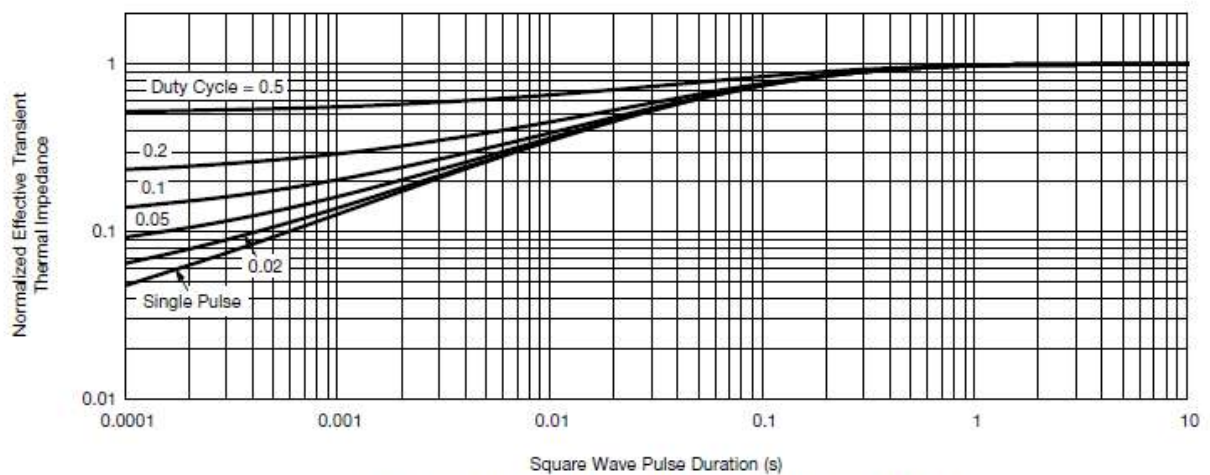
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

### ➤ Recommend IR Reflow Soldering Thermal Profile

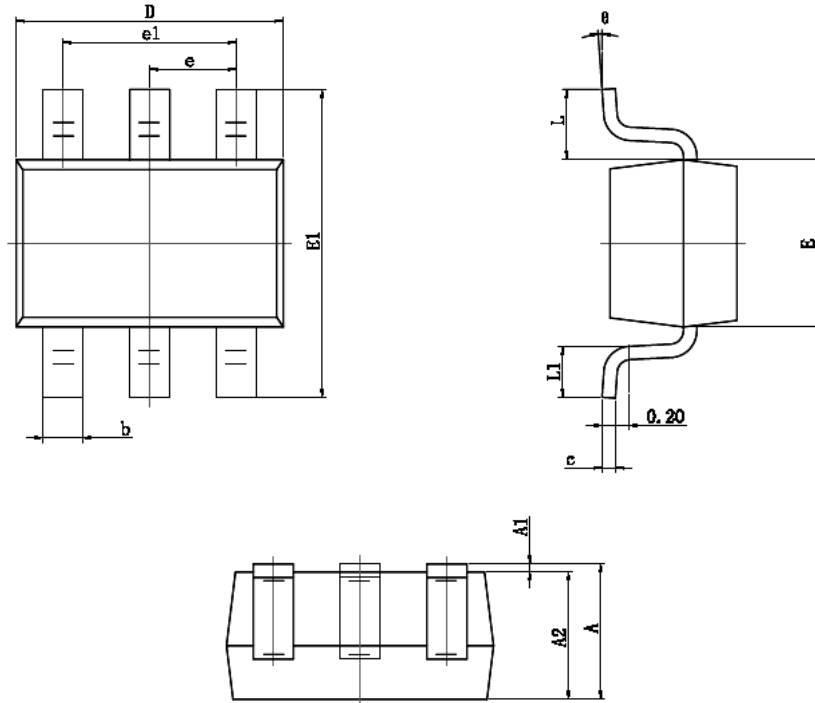


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	150°C
Temperature Max. (T <sub>smax</sub> )	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds
Average Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.
Liquidous Temperature (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
PAP3933H	SOT-363 Reel	3000 pcs

### ➤ Package Information ( SOT-363 )



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
$\theta$	0°	8°	0°	8°

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