

General Description

This PAP01T39X 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.

BVDSS	RDSON	ID
-100V	50mΩ	-30A

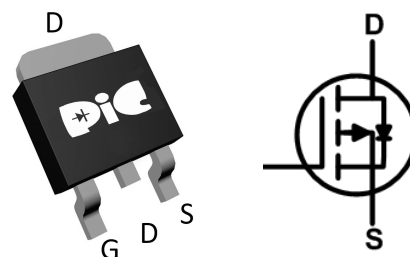
Feature

- ◆ Super Low Gate Charge
- ◆ 100% EAS Guaranteed
- ◆ Green Device Available
- ◆ Excellent CdV/dt effect decline
- ◆ Advanced high cell density Trench technology

Application

- ▼ Switching application
- ▼ DC/DC converters
- ▼ Power Tools

TO252 Pin Configuration



Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, V_{GS} @ -10V ¹	$I_D@T_C=25^\circ C$	-30	A
Continuous Drain Current, V_{GS} @ -10V ¹	$I_D@T_C=100^\circ C$	-19	A
Pulsed Drain Current ²	I_{DM}	-100	A
Single Pulse Avalanche Energy ³	EAS	345	mJ
Avalanche Current	I_{AS}	28	A
Total Power Dissipation ⁴	$P_D@T_C=25^\circ C$	104	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	$R_{\theta JA}$	62	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.22	$^\circ C/W$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=-250\mu A$	-100	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10V$, $I_D=-10A$	---	42	50	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-8A$	---	46	55	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1.2	-1.8	-2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-100V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	-50	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=-10V$, $I_D=-10A$	---	32	---	S
Total Gate Charge	Q_g	$V_{DS}=-80V$, $V_{GS}=-10V$, $I_D=-14A$	---	92	---	nC
Gate-Source Charge	Q_{gs}		---	17.5	---	
Gate-Drain Charge	Q_{gd}		---	14	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=-50V$, $V_{GS}=-10V$, $R_G=3.3\Omega$, $I_D=-14A$	---	20.5	---	ns
Rise Time	T_r		---	32.2	---	
Turn-Off Delay Time	$T_{d(off)}$		---	123	---	
Fall Time	T_f		---	63.7	---	
Input Capacitance	C_{iss}	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6516	---	pF
Output Capacitance	C_{oss}		---	223	---	
Reverse Transfer Capacitance	C_{rss}		---	125	---	

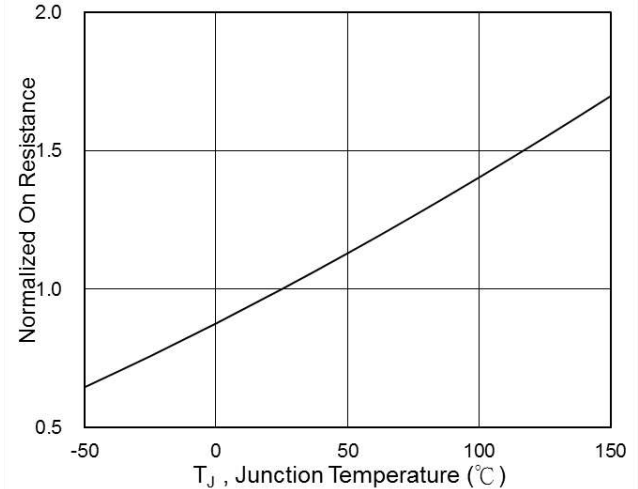
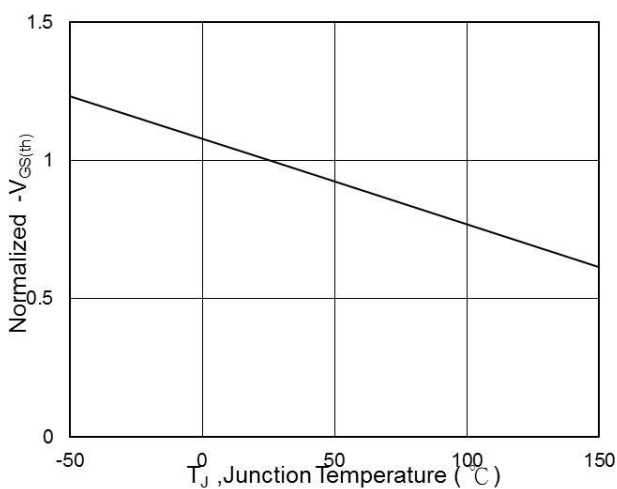
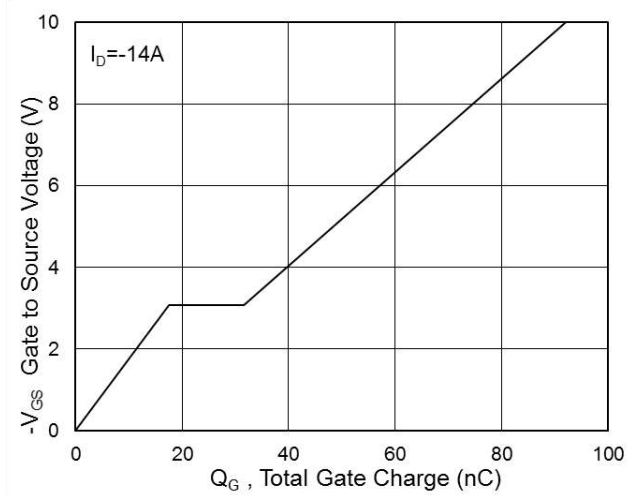
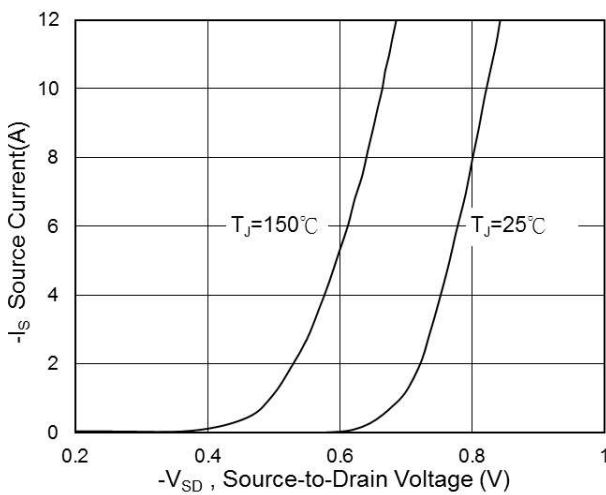
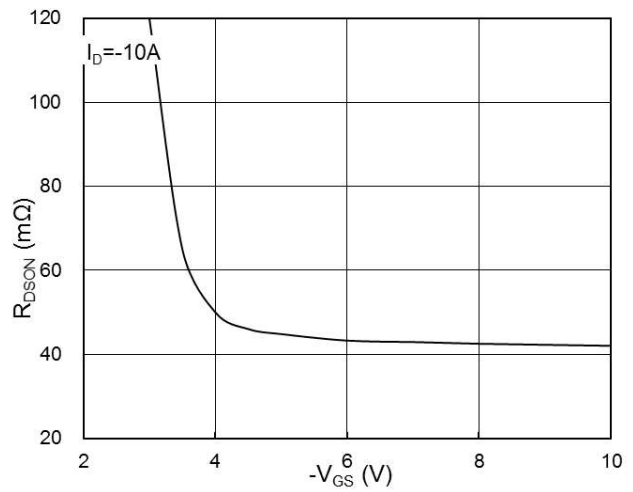
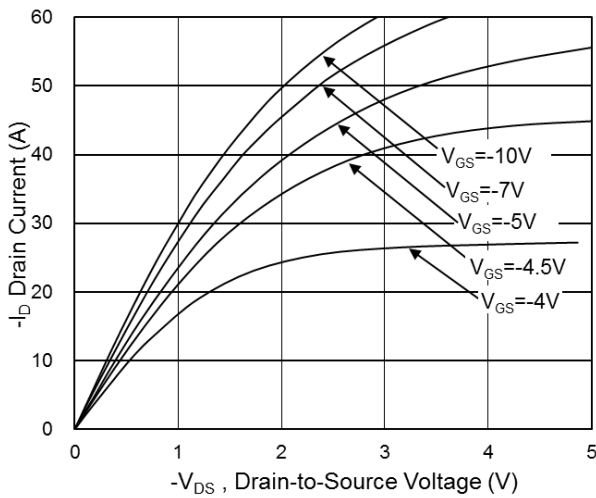
Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0V$, Force Current	---	---	-30	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V$, $I_S=-1A$, $T_J=25^\circ\text{C}$	---	---	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-14A$, $di/dt=-100A/\mu s$, $T_J=25^\circ\text{C}$	---	31.2	---	nS
Reverse Recovery Charge	Q_{rr}		---	31.97	---	nC

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. The EAS data shows Max. rating . The test condition is $V_{DD}=-25V$, $V_{GS}=-10V$, $L=0.88mH$, $I_{AS}=-28A$
4. Ensure that the channel temperature does not exceed 150°C .
5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics



Typical Characteristics

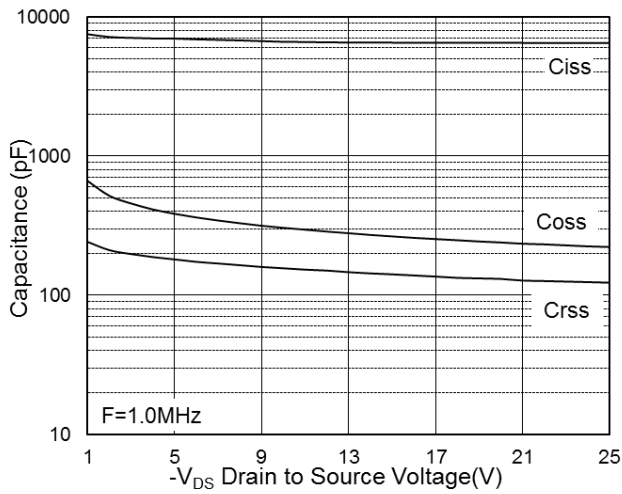


Fig.7 Capacitance

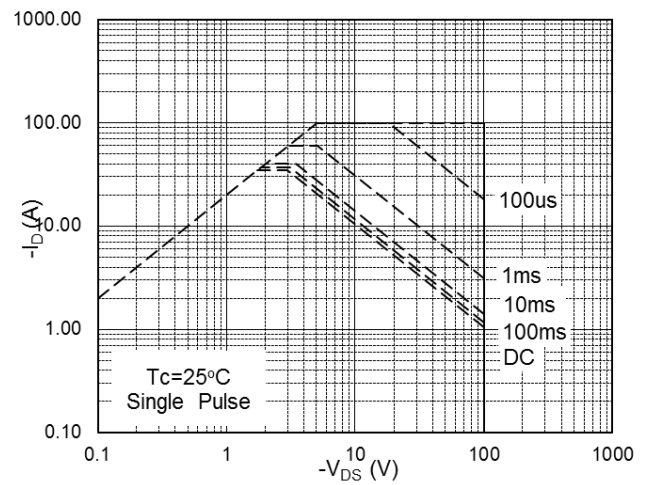


Fig.8 Safe Operating Area

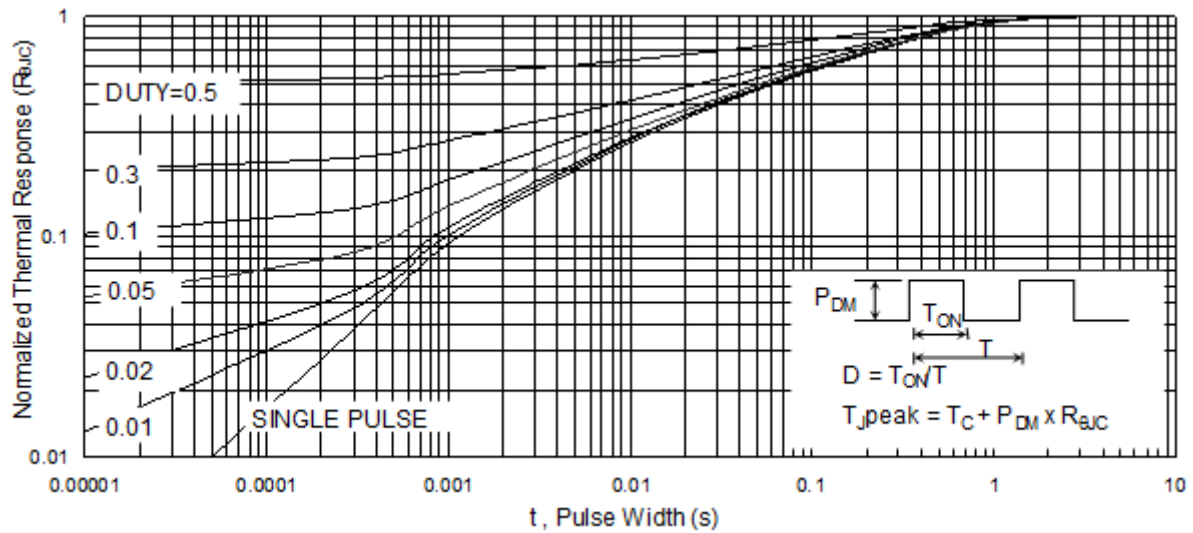


Fig.9 Normalized Maximum Transient Thermal Impedance

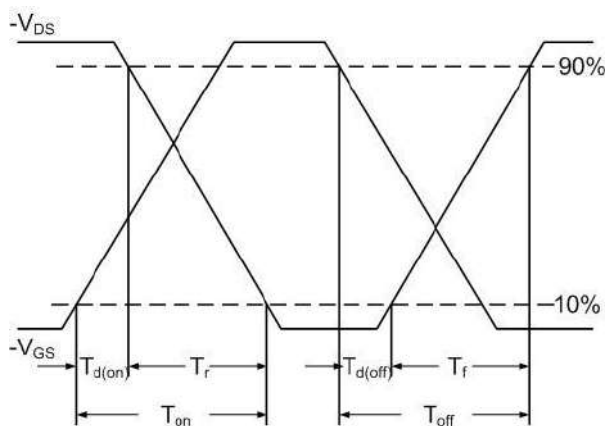


Fig.10 Switching Time Waveform

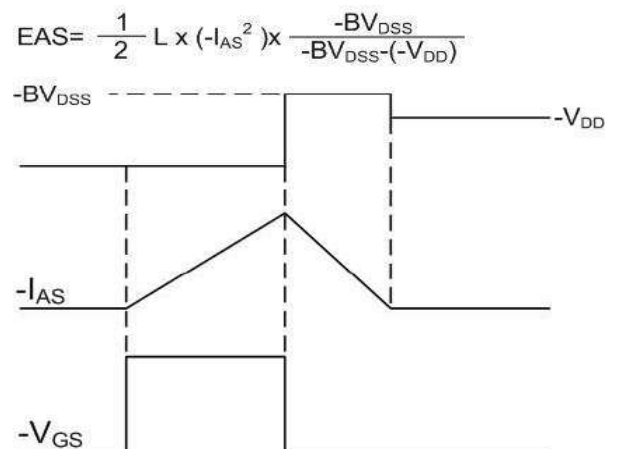
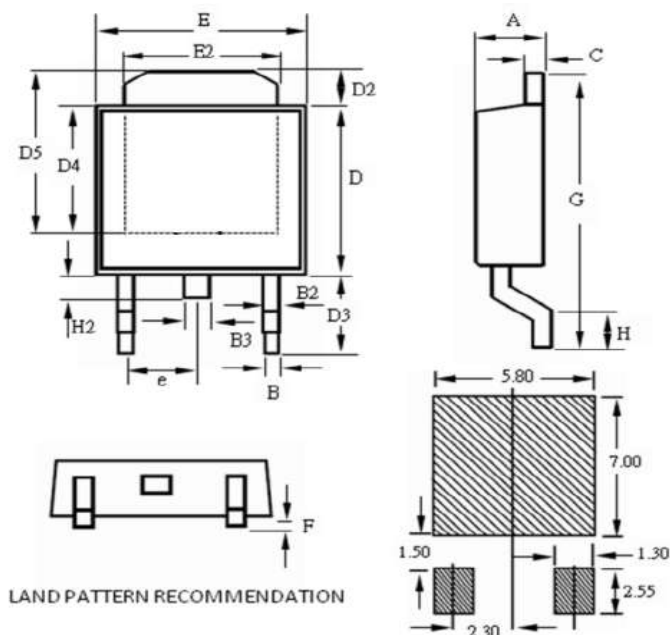


Fig.11 Unclamped Inductive Waveform

TO-252 Package Outline



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.10	--	2.50	0.083	--	0.098
B	0.30	--	0.89	0.012	--	0.035
B2	0.40	--	1.14	0.016	--	0.045
B3	0.60	--	1.00	0.024	--	0.039
C	0.40	--	0.89	0.016	--	0.035
D	5.30	--	6.25	0.209	--	0.246
D2	0.50	--	1.70	0.020	--	0.067
D3	2.20	--	3.40	0.087	--	0.134
D4	4.32	--	--	0.170	--	--
D5	5.21	--	--	0.205	--	--
E	6.30	--	6.73	0.248	--	0.265
E2	4.80	--	5.46	0.189	--	0.215
F	0.00	--	0.30	0.000	--	0.012
G	9.20	--	10.41	0.362	--	0.410
H	0.90	--	1.95	0.035	--	0.077
H2	0.50	--	1.10	0.020	--	0.043
e	--	2.30	--	--	0.091	--

Ordering Information

Part Number	Description	Quantity
PAP01T39X	TO-252 Reel	2500 pcs

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