

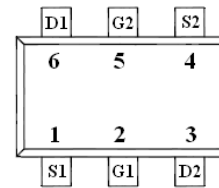
➤ General Description

This PAP2023EL 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

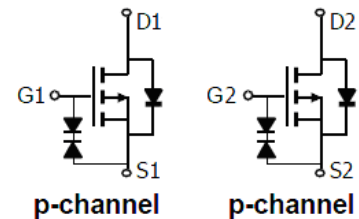
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- Low Battery Voltage Operation
- SOT-563 package design

➤ SOT-563



➤ Application

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Paggers



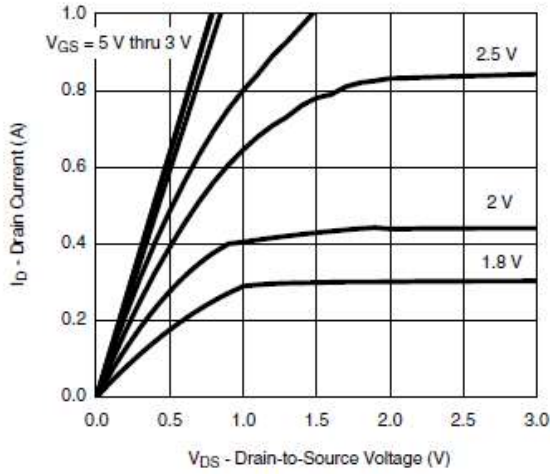
➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate -Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current($T_J=150^\circ C$)	I_D	$T_A=25^\circ C$	-0.45
		$T_A=70^\circ C$	-0.25
Pulsed Drain Current	I_{DM}	-1.0	A
Continuous Source Current(Diode Conduction)	I_S	-0.3	A
Power Dissipation	P_D	$T_A=25^\circ C$	0.27
		$T_A=70^\circ C$	0.16
Operating Junction Temperature	T_J	-55/150	$^\circ C$
Storage Temperature Range	T_{STG}	-55/150	$^\circ C$

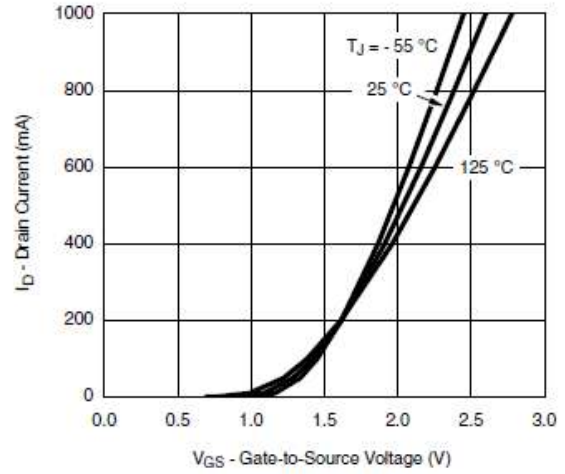
➤ **Electrical Characteristics (T_A=25°C Unless otherwise noted)**

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-1.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 1	mA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-5	uA
		$V_{DS}=-20V, V_{GS}=0V$ $T_J=85^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	0.7			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-0.6A$		550	800	mΩ
		$V_{GS}=-2.5V, I_D=-0.5A$		700	950	
		$V_{GS}=-1.8V, I_D=-0.4A$		1000	1250	
Forward Transconductance	g_{FS}	$V_{DS}=-10V, I_D=-0.4A$		1		S
Diode Forward Voltage	V_{SD}	$I_S=-0.15A, V_{GS}=0V$		0.65	1.2	V
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V$ $f=1MHz$		70	100	pF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{riss}			10		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V$ $I_D=-0.25A$		1.0	1.3	nC
Gate-Source Charge	Q_{gs}			0.1		
Gate-Drain Charge	Q_{gd}			0.3		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-10V, R_L=30\Omega$ $I_D=-0.2A, V_{GEN}=-4.5V$ $R_G=10\Omega$		10	15	ns
	t_r			10	15	
Turn-Off Time	$t_{d(off)}$			40	60	
	t_f			30	50	

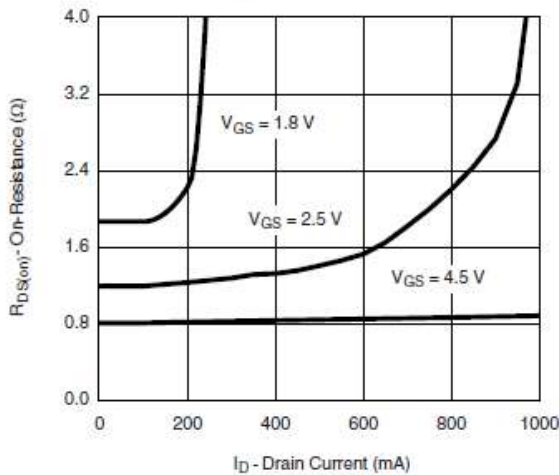
➤ Typical Characteristics



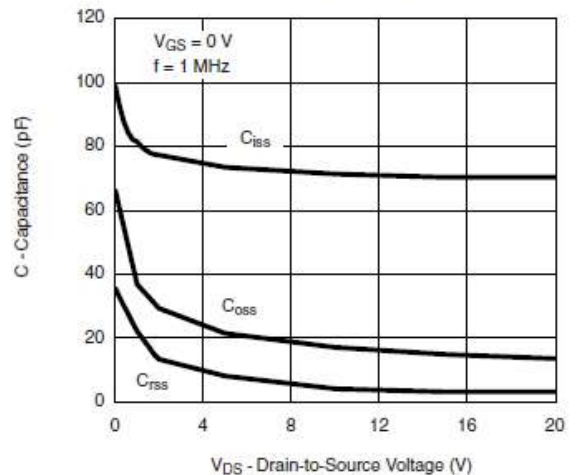
Output Characteristics



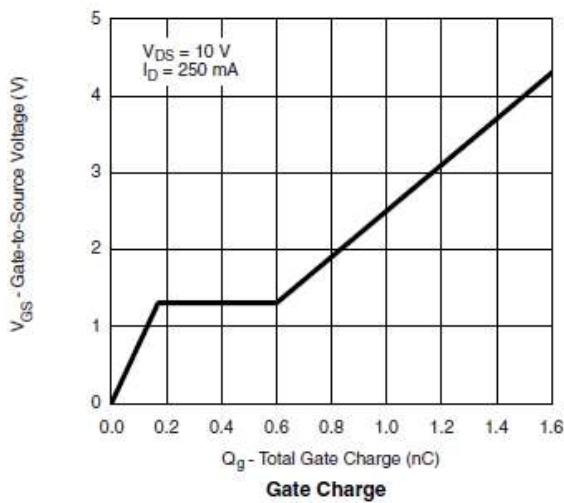
Transfer Characteristics



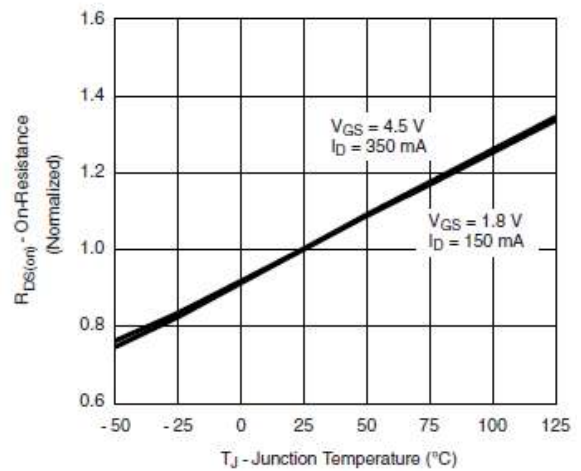
On-Resistance vs. Drain Current



Capacitance



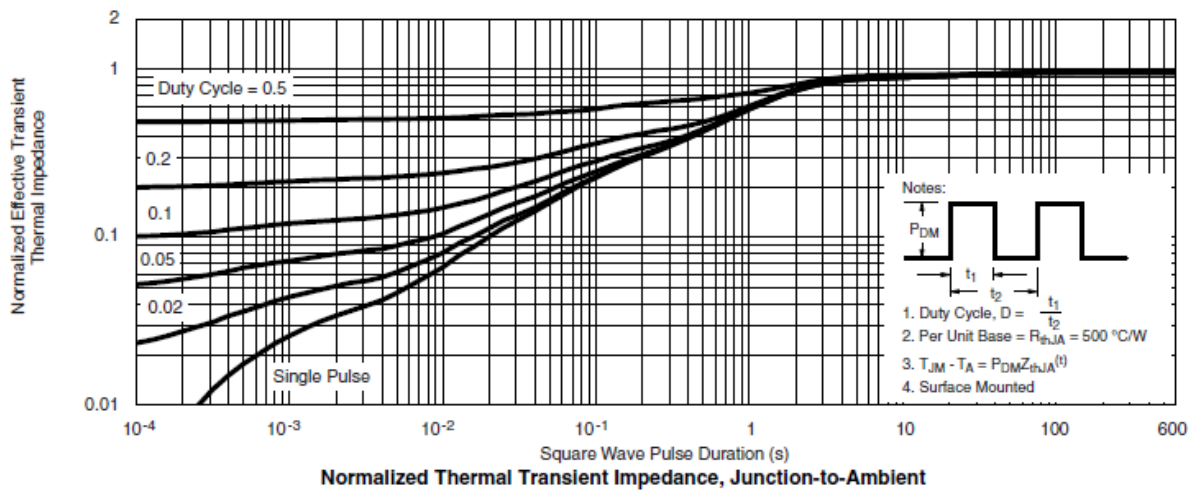
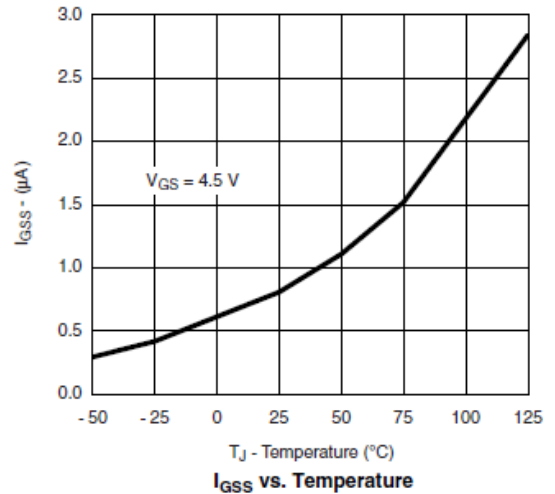
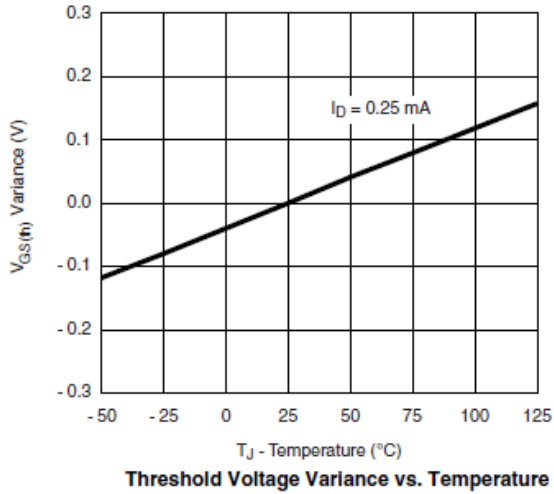
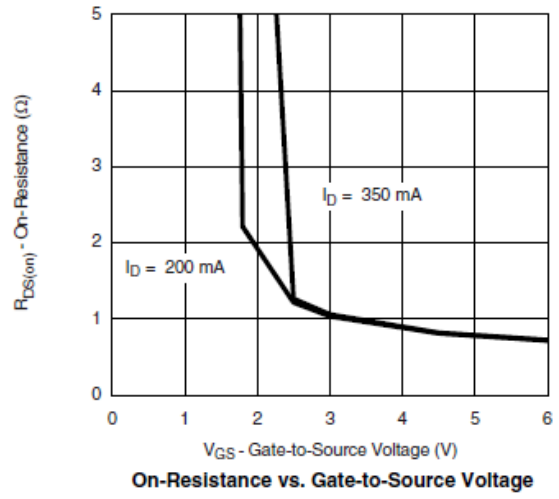
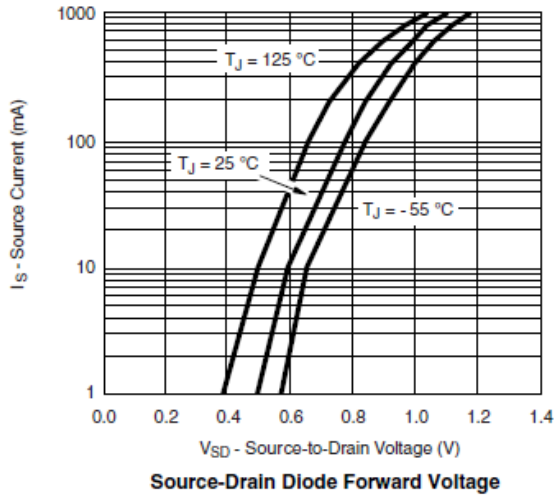
Gate Charge



On-Resistance vs. Junction Temperature

Dual P-Ch -20V Fast Switching MOSFET

$V_{DS} = -20V$, $I_D = -0.45A$, $R_{DS(on)} = 800m\Omega$



➤ Recommend IR Reflow Soldering Thermal Profile

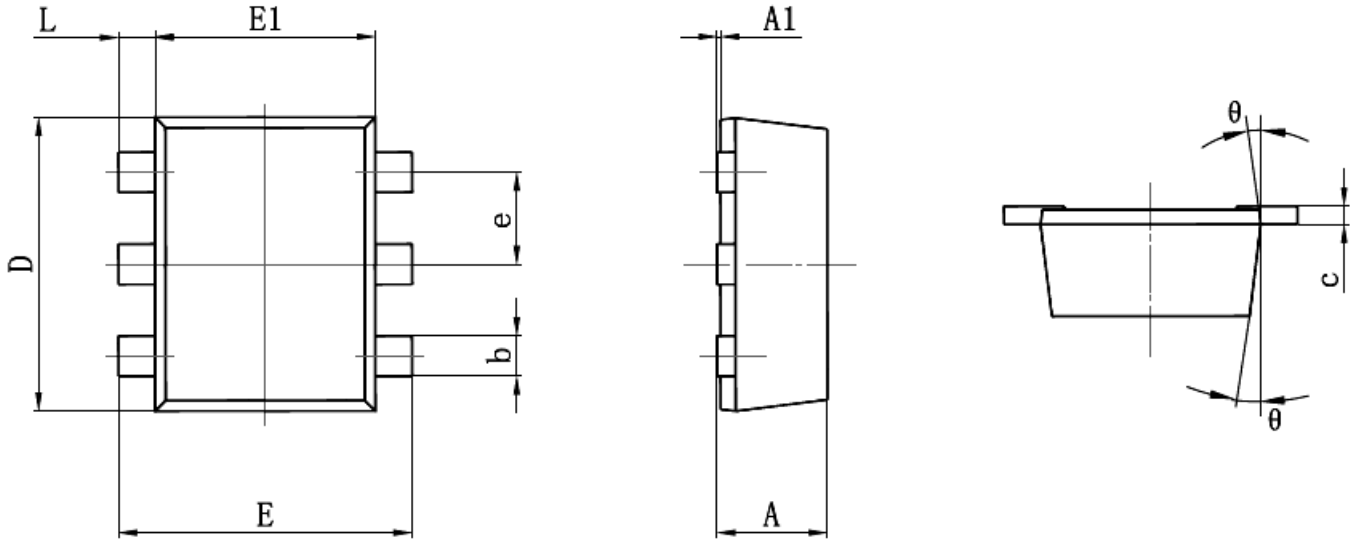


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
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
PAP2023EL	SOT-563 Reel	3000 pcs

➤ Package Information (SOT-563)



Symbol	Dimenslons In Millimeters		Dimenslons In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7 °REF.		7 °REF.	

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