



# PJE8405

## 30V P-Channel Enhancement Mode MOSFET – ESD Protected

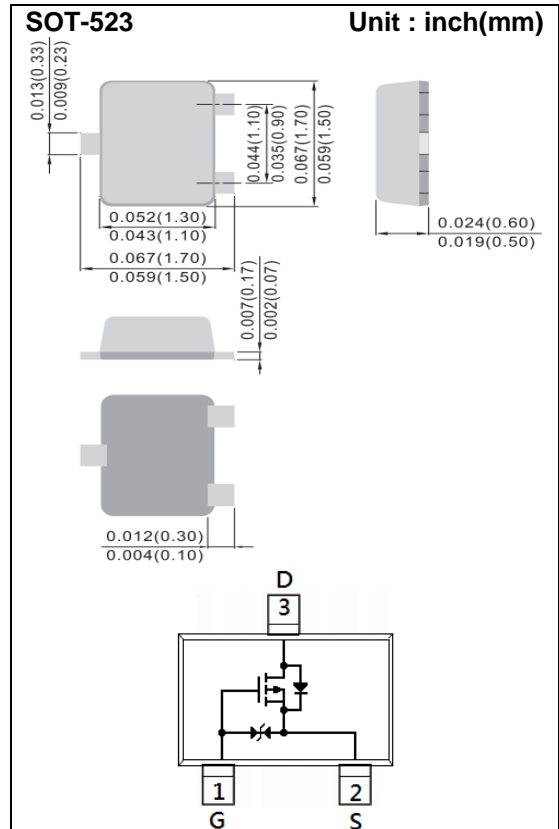
**Voltage**    **-30 V**    **Current**    **-0.5A**

### Features

- RDS(ON) , VGS@-4.5V, ID@-0.5A<390mΩ
- RDS(ON) , VGS@-2.5V, ID@-0.3A<560mΩ
- RDS(ON) , VGS@-1.8V, ID@-0.1A<990mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std.  
(Halogen Free)

### Mechanical Data

- Case: SOT-523 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00007 ounces, 0.002 grams
- Marking: E05



### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	-30	V
Gate-Source Voltage		V <sub>GS</sub>	+8	V
Continuous Drain Current		I <sub>D</sub>	-0.5	A
Pulsed Drain Current		I <sub>DM</sub>	-2.0	A
Power Dissipation	T <sub>a</sub> =25°C	P <sub>D</sub>	300	mW
	Derate above 25°C		2.4	mW/°C
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
Typical Thermal resistance		R <sub>θJA</sub>	417	°C/W
- Junction to Ambient (Note 3)				



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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-0.98	-1.3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-0.5A$	-	318	390	m $\Omega$
		$V_{GS}=-2.5V, I_D=-0.3A$	-	427	560	
		$V_{GS}=-1.8V, I_D=-0.1A$	-	853	990	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	-	-0.01	-1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	$\pm 3.2$	$\pm 10$	$\mu A$
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, I_D=-0.5A,$ $V_{GS}=-4.5V$ (Note 1,2)	-	1.6	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.5	-	
Gate-Drain Charge	$Q_{gd}$		-	0.3	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $f=1.0\text{MHZ}$	-	137	-	pF
Output Capacitance	$C_{oss}$		-	23	-	
Reverse Transfer Capacitance	$C_{rss}$		-	10	-	
<b>Switching</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-0.5A,$ $V_{GS}=-4.5V,$ $R_G=6\Omega$ (Note 1,2)	-	11	-	ns
Turn-On Rise Time	$t_r$		-	52	-	
Turn-Off Delay Time	$t_{d(off)}$		-	65	-	
Turn-Off Fall Time	$t_f$		-	46	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	-0.4	A
Diode Forward Voltage	$V_{SD}$	$I_S=-1.0A, V_{GS}=0V$		-0.93	-1.2	V

NOTES :

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper
4. The maximum current rating is package limited



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## TYPICAL CHARACTERISTIC CURVES

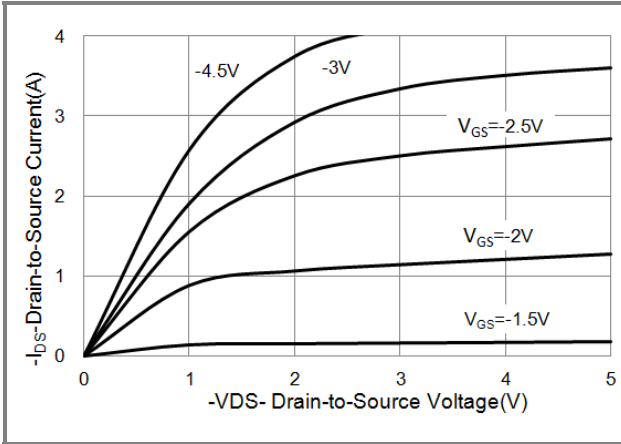


Fig.1 On-Region Characteristics

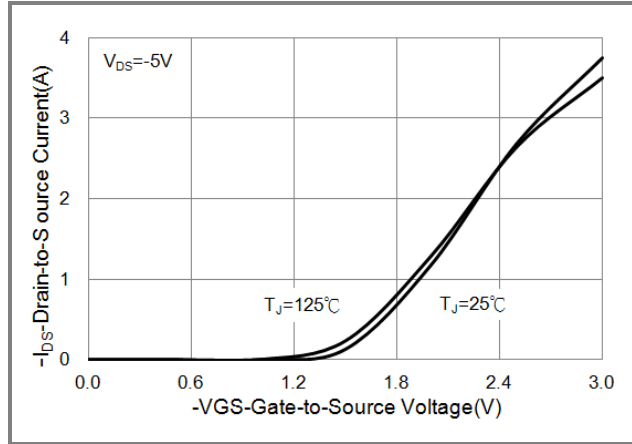


Fig.2 Transfer Characteristics

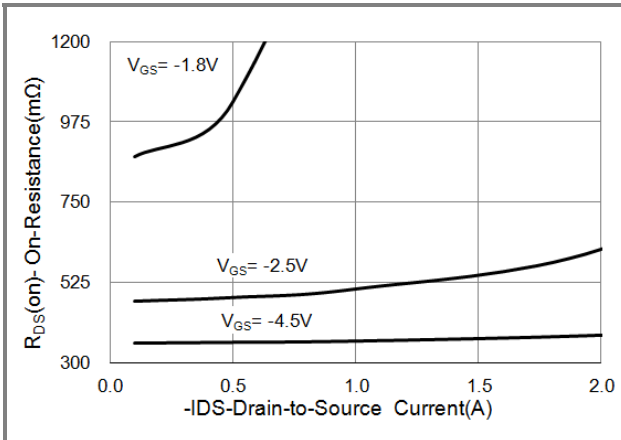


Fig.3 On-Resistance vs. Drain Current

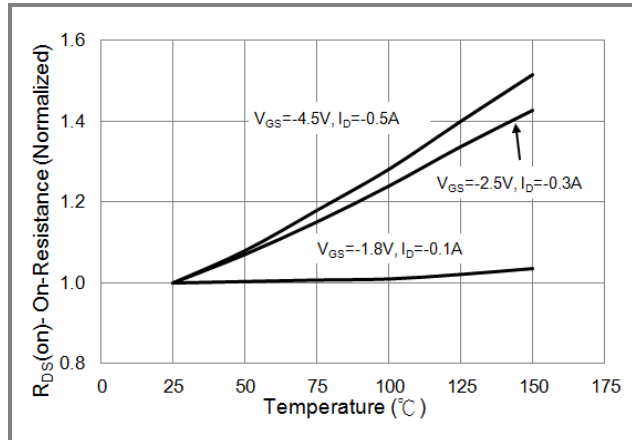


Fig.4 On-Resistance vs. Junction temperature

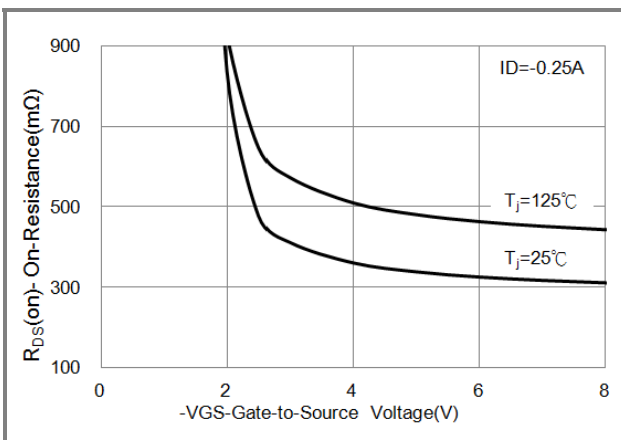


Fig.5 On-Resistance Variation with VGS.

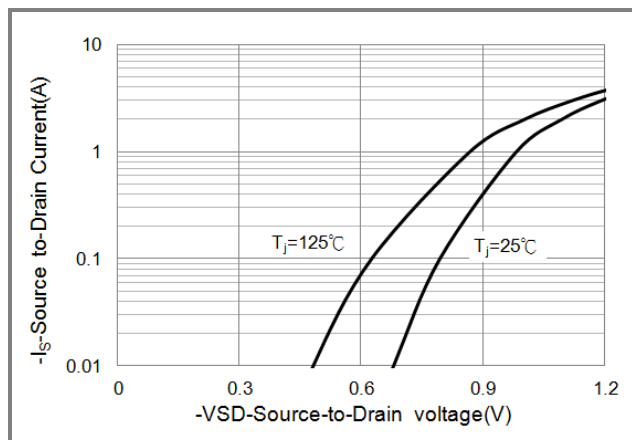


Fig.6 Body Diode Characteristics



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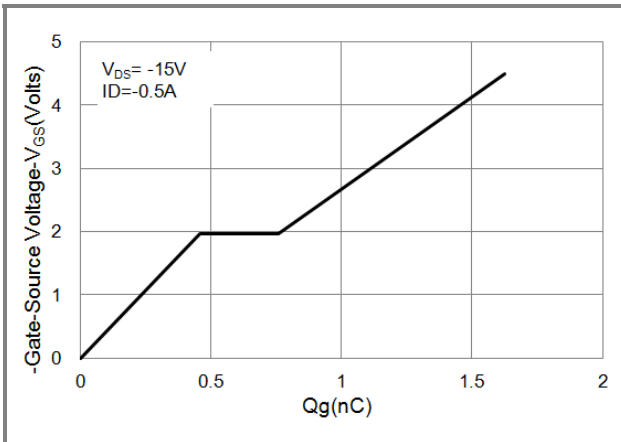


Fig.7 Gate-Charge Characteristics

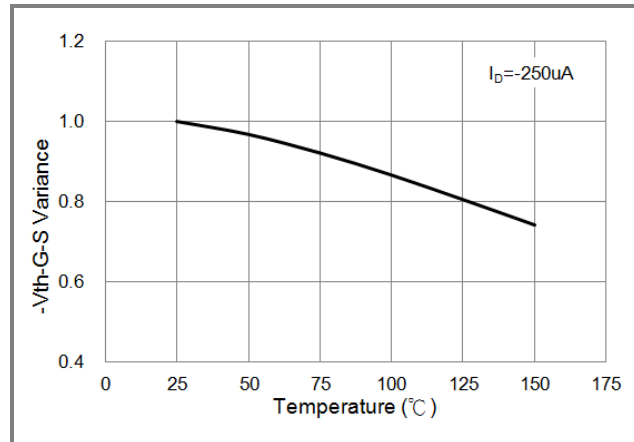


Fig.8 Threshold Voltage Variation with Temperature

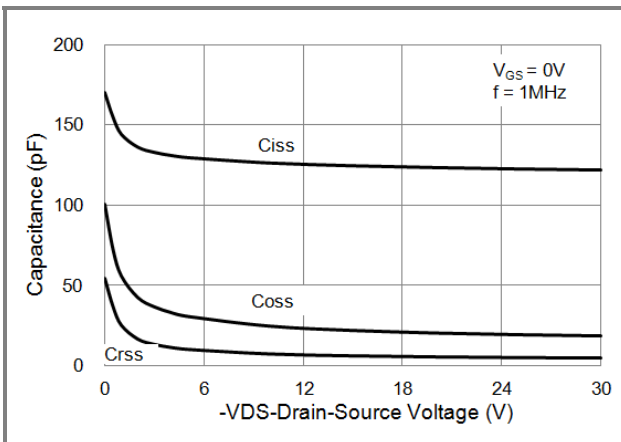


Fig.9 Capacitance vs. Drain-Source Voltage

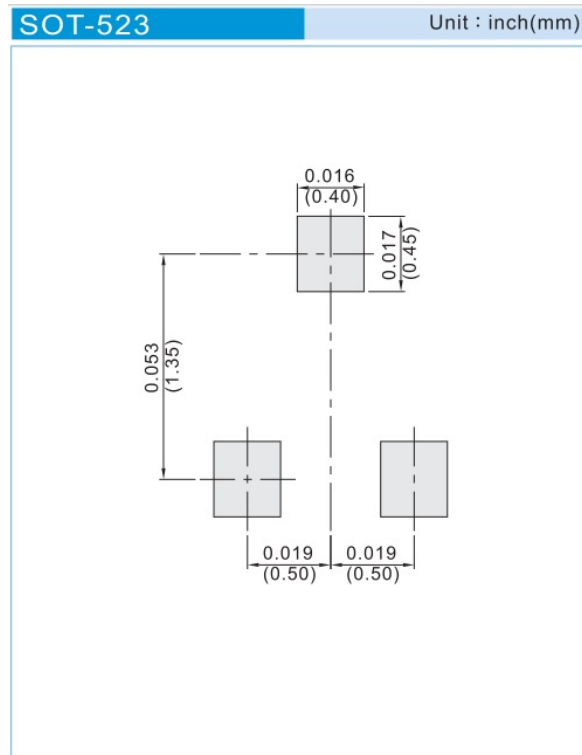


# PJE8405

## PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJE8405_R1_00001	SOT-523	4K pcs / 7" reel	E05	Halogen free

## MOUNTING PAD LAYOUT





## PJE8405

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