

# PJT7604-AU

## 30V Complementary Enhancement Mode MOSFET - ESD Protected

**Voltage**

30 / -30 V

**Current**

300 / -300 mA

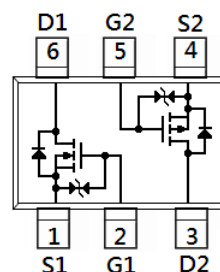
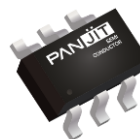
SOT-363

### Features

- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- ESD Protected
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : SOT-363 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.006 grams



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

PARAMETER		SYMBOL	N-Ch LIMIT	P-Ch LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	30	-30	V
Gate-Source Voltage		V <sub>GS</sub>	±10		
Continuous Drain Current <sup>(Note 5)</sup>		I <sub>D</sub>	300	-300	mA
Pulsed Drain Current <sup>(Note 1)</sup>		I <sub>DM</sub>	600	-600	
Power Dissipation	T <sub>a</sub> =25°C	P <sub>D</sub>	350		mW
	Derate above 25°C		2.8		mW/°C
Operating Junction and Storage Temperature Range		T <sub>J</sub> ,T <sub>STG</sub>	-55~150		°C
Thermal resistance		R <sub>θJA</sub>	357		°C/W
- Junction to Ambient <sup>(Note 5)</sup>					

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.4	0.75	1	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =300mA	-	0.7	1.2	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =200mA	-	0.8	1.6	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =100mA	-	0.9	2	
		V <sub>GS</sub> =1.5V, I <sub>D</sub> =50mA	-	1.1	3	
		V <sub>GS</sub> =1.2V, I <sub>D</sub> =20mA	-	1.5	4	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	-	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =300mA, V <sub>GS</sub> =4.5V (Note 2,3)	-	0.9	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.3	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.2	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz	-	45	-	pF
Output Capacitance	C <sub>oss</sub>		-	14	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	0.8	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =300mA, V <sub>GS</sub> =4V, R <sub>G</sub> =10Ω (Note 2,3)	-	8.3	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	5.7	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	35	-	
Turn-Off Fall Time	t <sub>f</sub>		-	12	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	300	mA
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 300mA, V <sub>GS</sub> =0V		0.9	1.3	V

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4	-0.76	-1	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-500mA	-	1.6	2.5	Ω
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-200mA	-	2	3	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-100mA	-	2.5	4	
		V <sub>GS</sub> =-1.5V, I <sub>D</sub> =-40mA	-	3	6	
		V <sub>GS</sub> =-1.2V, I <sub>D</sub> =-10mA	-	5	8	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	-	-	-1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V	-	-	±10	
Dynamic (Note 5)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-300mA, V <sub>GS</sub> =-4.5V (Note 2,3)	-	0.92	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	0.16	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	0.06	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz	-	48	-	pF
Output Capacitance	C <sub>oss</sub>		-	14	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	4	-	
Turn-On Delay Time	td <sub>(on)</sub>	V <sub>DD</sub> =-10V, I <sub>D</sub> =-300mA, V <sub>GS</sub> =-4.5V, R <sub>G</sub> =10Ω (Note 2,3)	-	23	-	ns
Turn-On Rise Time	tr		-	37	-	
Turn-Off Delay Time	td <sub>(off)</sub>		-	80	-	
Turn-Off Fall Time	tf		-	98	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>	---	-	-	-250	mA
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-500mA, V <sub>GS</sub> =0V		-1	-1.3	V

### NOTES :

- Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
- Essentially independent of operating temperature typical characteristics.
- Repetitive rating, pulse width limited by junction temperature  $T_{J(MAX)}=150^{\circ}\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^{\circ}\text{C}$ .
- $R_{\theta JA}$  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.
- The maximum current rating is package limited.
- Guaranteed by design, not subject to production testing.

# PJT7604-AU

## N-Channel TYPICAL CHARACTERISTIC CURVES

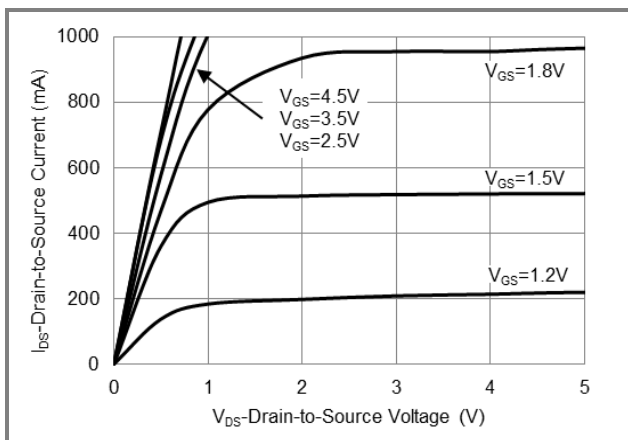


Fig.1 On-Region Characteristics

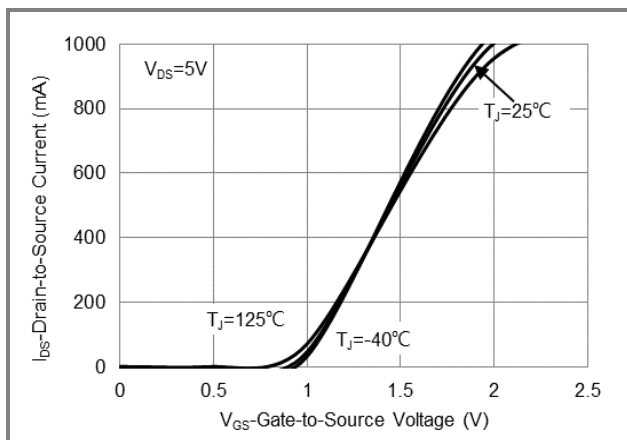


Fig.2 Transfer Characteristics

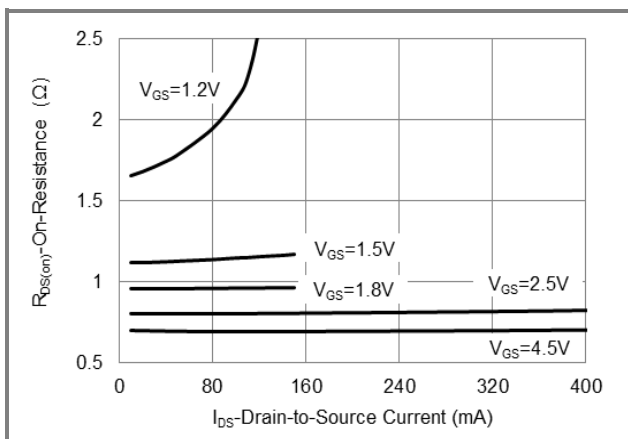


Fig.3 On-Resistance vs. Drain Current

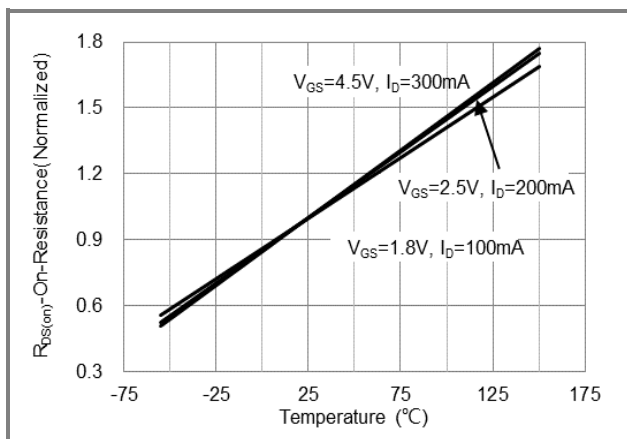


Fig.4 On-Resistance vs. Junction temperature

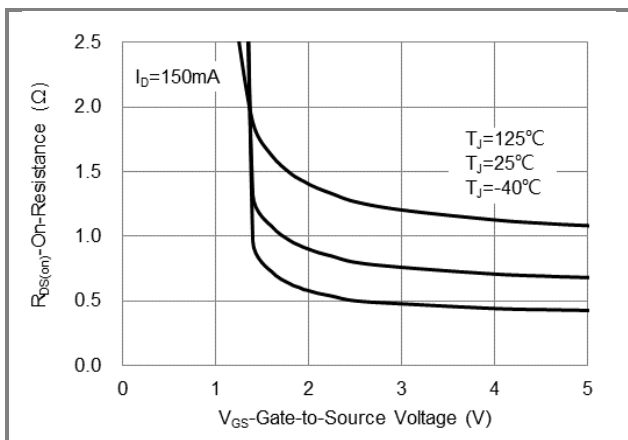


Fig.5 On-Resistance Variation with  $V_{GS}$

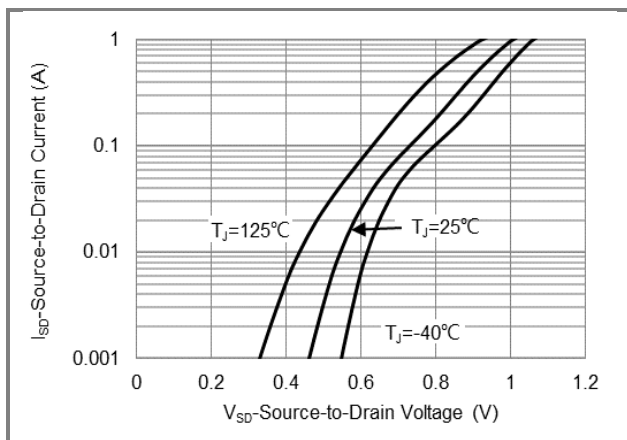
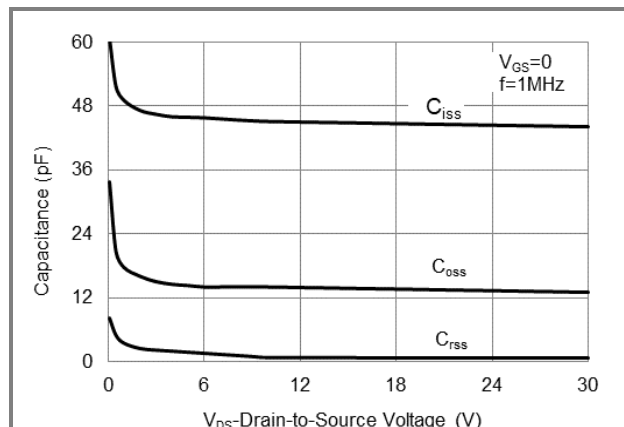
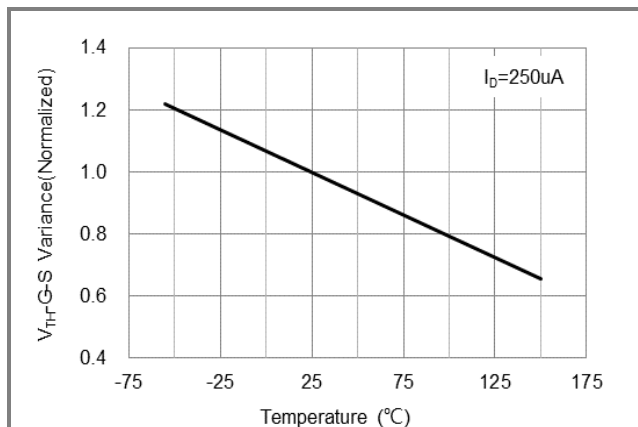
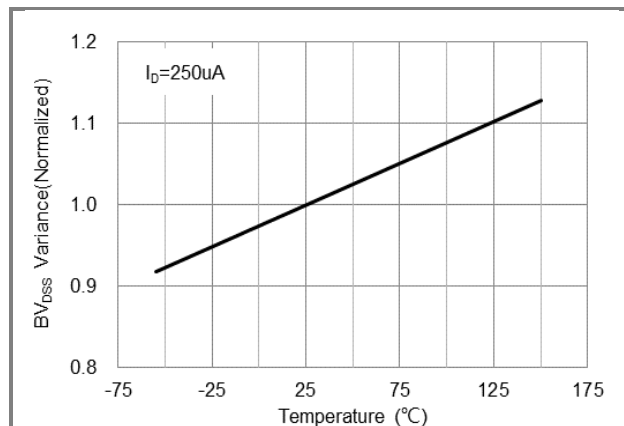
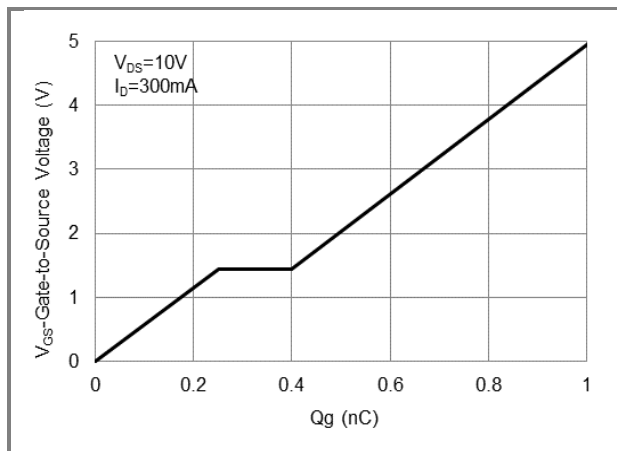


Fig.6 Body Diode Characteristics

## PJT7604-AU

### N-Channel TYPICAL CHARACTERISTIC CURVES



## PJT7604-AU

### P-Channel TYPICAL CHARACTERISTIC CURVES

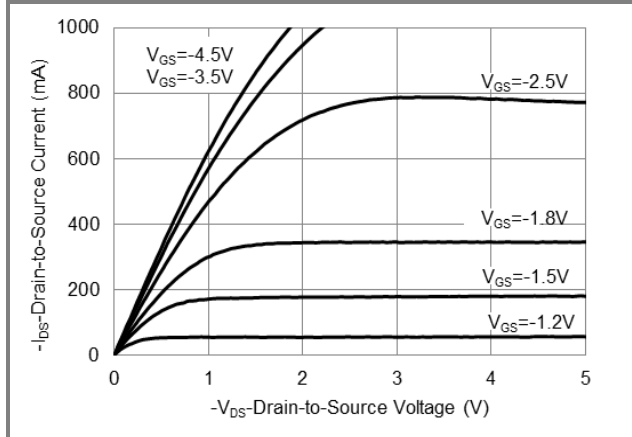


Fig.1 On-Region Characteristics

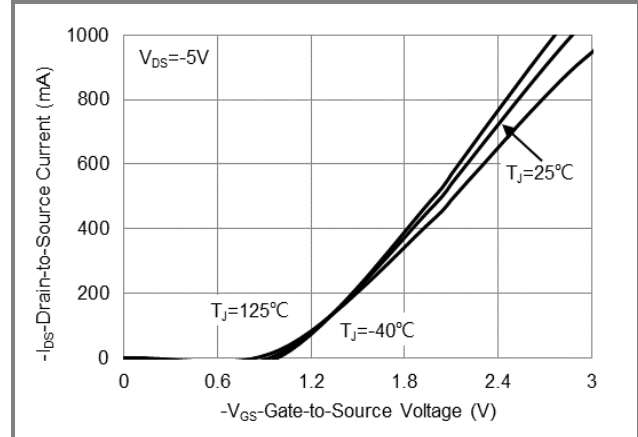


Fig.2 Transfer Characteristics

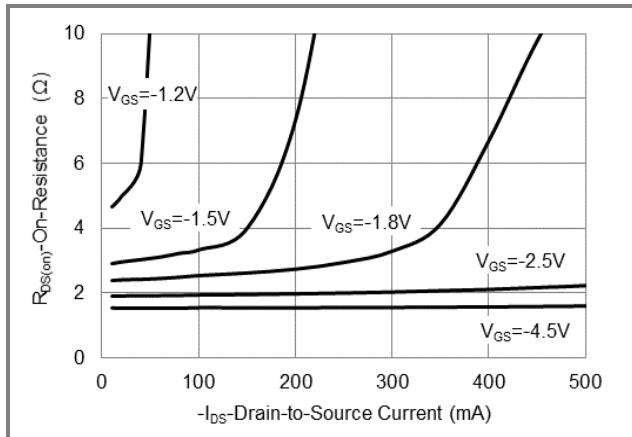


Fig.3 On-Resistance vs. Drain Current

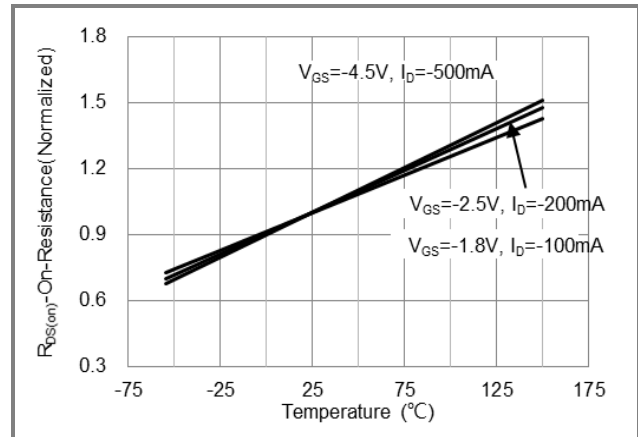


Fig.4 On-Resistance vs. Junction temperature

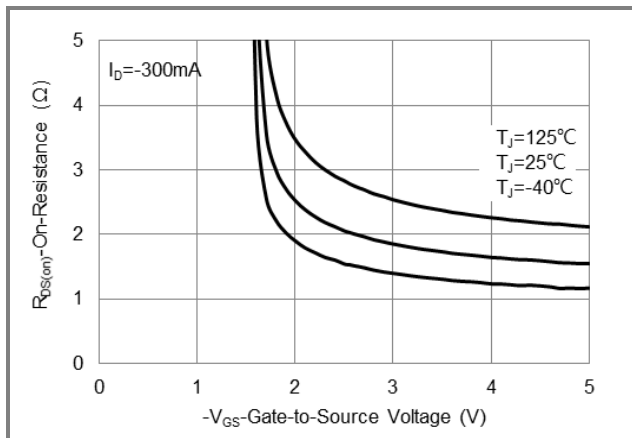


Fig.5 On-Resistance Variation with  $V_{GS}$

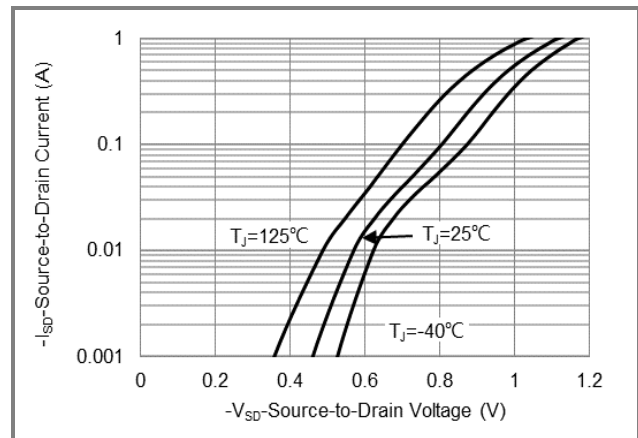
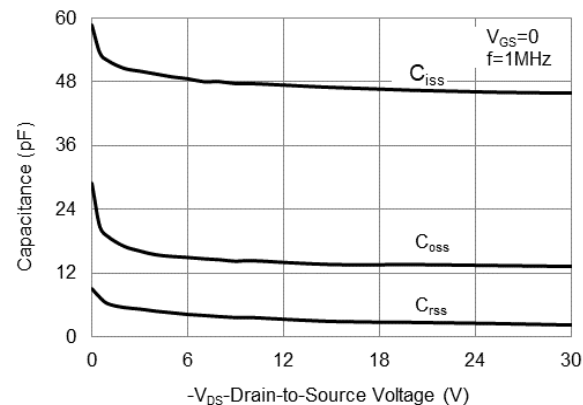
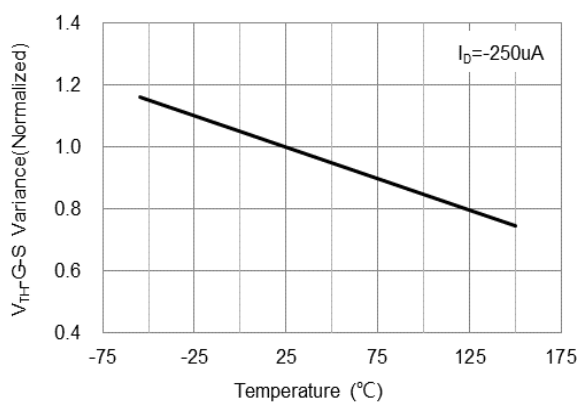
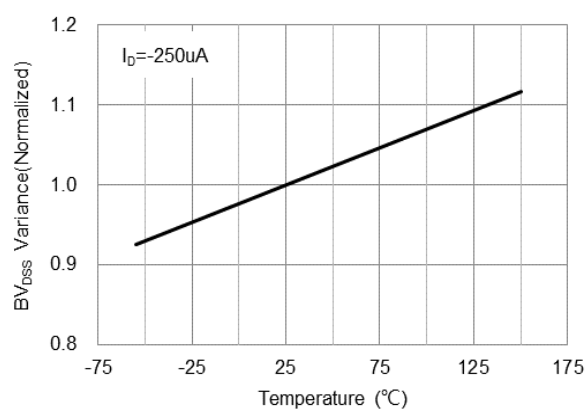
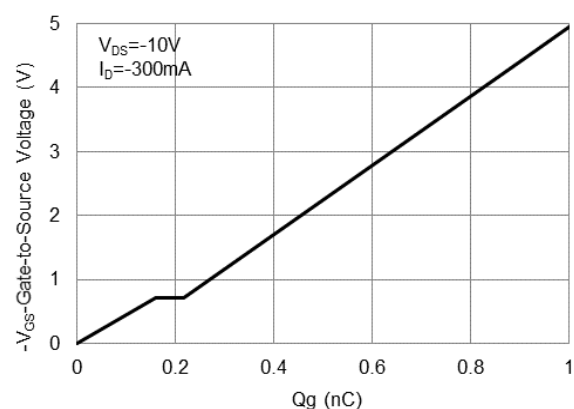


Fig.6 Body Diode Characteristics

## PJT7604-AU

### P-Channel TYPICAL CHARACTERISTIC CURVES

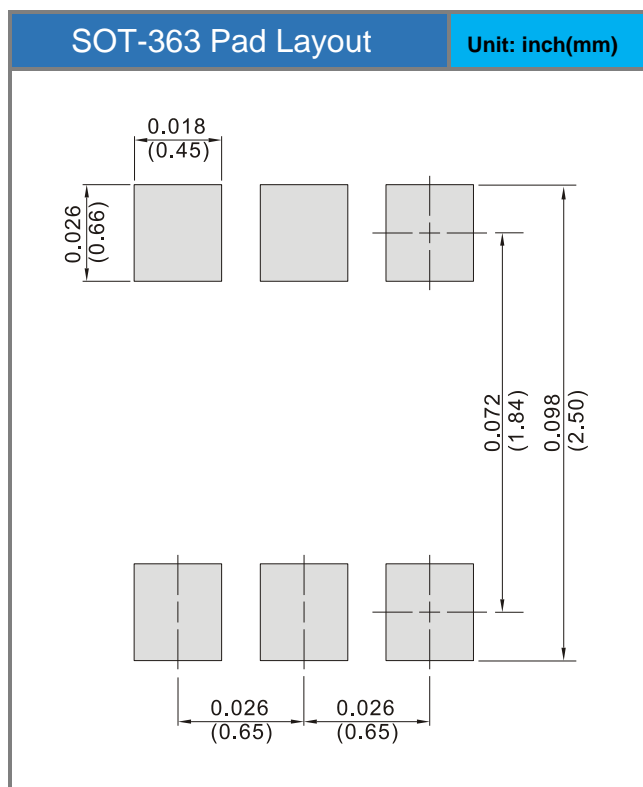
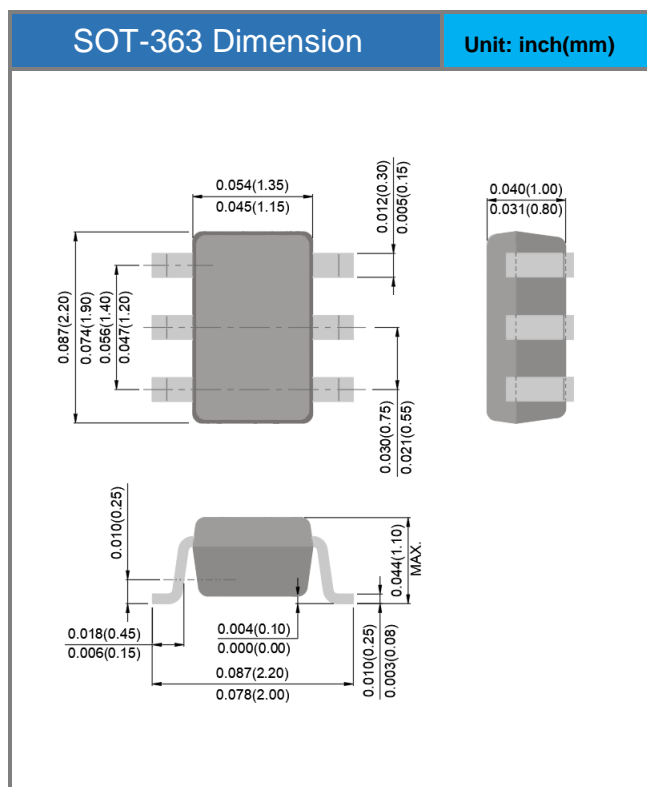


# PJT7604-AU

## Product and Packing Information

Part No	Package Type	Packing Type	Marking
PJT7604-AU	SOT-363	3K pcs / 7" reel	T64

## Packaging Information & Mounting Pad Layout





## PJT7604-AU

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