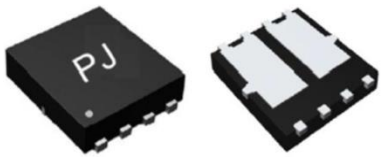
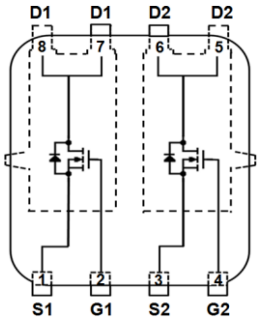
PJQ5844-AU

40V Dual N-Channel Enhancement Mode MOSFET

Voltage	40 V	Current	45 A

DFN5060B-8L





Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@15A<8mΩ
- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@8A<10.5mΩ
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : DFN5060B-8L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0035 ounces, 0.092 grams

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (Note 4)	T_C=25°C	I_D	45	A
	T_C=100°C		28	
Pulsed Drain Current (Note 1)	T_C=25°C	I_{DM}	180	
Power Dissipation	T_C=25°C	P_D	38.5	W
	T_C=100°C		19.2	
Continuous Drain Current (Note 4)	T_A=25°C	I_D	10	A
	T_A=70°C		8	
Power Dissipation	T_A=25°C	P_D	2.0	W
	T_A=70°C		1.4	
Single Pulse Avalanche Energy (Note 6)		E_{AS}	80	mJ
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~175	°C
Typical Thermal Resistance (Note 4,5)	Junction to Case	$R_{\theta JC}$	3.9	°C/W
	Junction to Ambient	$R_{\theta JA}$	73.5	

- Limited only By Maximum Junction Temperature

PJQ5844-AU

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.61	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=15A	-	6.5	8	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=8A	-	8	10.5	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	V_{DS}=20V, I_D=10A, V_{GS}=4.5V (Note 1,2)	-	17	-	nC
Gate-Source Charge	Q_{gs}		-	4.9	-	
Gate-Drain Charge	Q_{gd}		-	6.4	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1MHZ	-	1759	-	pF
Output Capacitance	Coss		-	176	-	
Reverse Transfer Capacitance	Crss		-	126	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=15V, I_D=1A, V_{GS}=10V, R_G=6Ω (Note 1,2)	-	11	-	ns
Turn-On Rise Time	t_r		-	21	-	
Turn-Off Delay Time	$td_{(off)}$		-	40	-	
Turn-Off Fall Time	t_f		-	25	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	45	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	0.7	1	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
4. The maximum current rating is package limited.
5. $R_{\Theta JA}$ 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^2 with 2oz.square pad of copper.
6. The test condition is L=0.1mH, I_{AS}=40A, V_{DD}=25V, V_{GS}=10V, Starting T_J=25°C.
7. Guaranteed by design, not subject to production testing.

PJQ5844-AU

TYPICAL CHARACTERISTIC CURVES

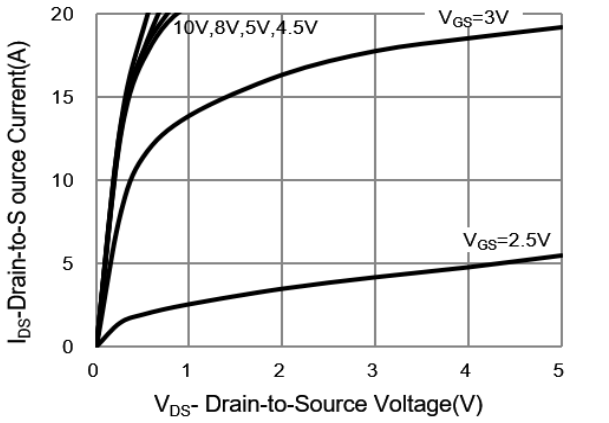


Fig.1 Output Characteristics

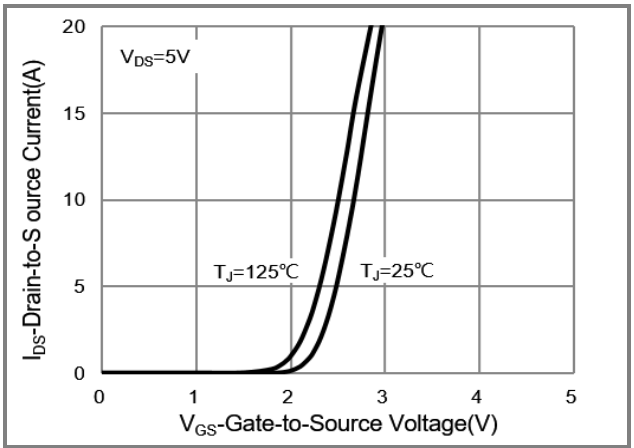


Fig.2 Transfer Characteristics

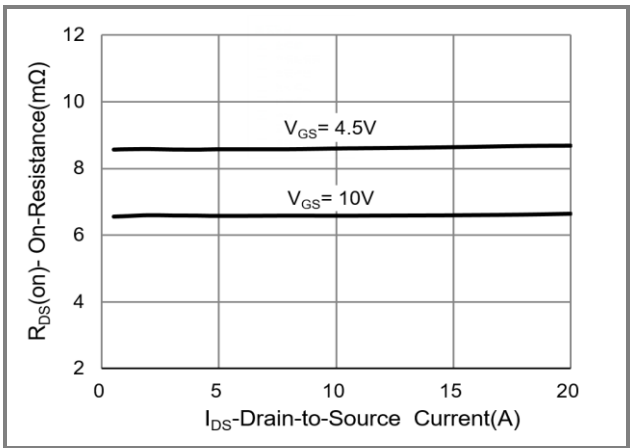


Fig.3 On-Resistance vs. Drain Current

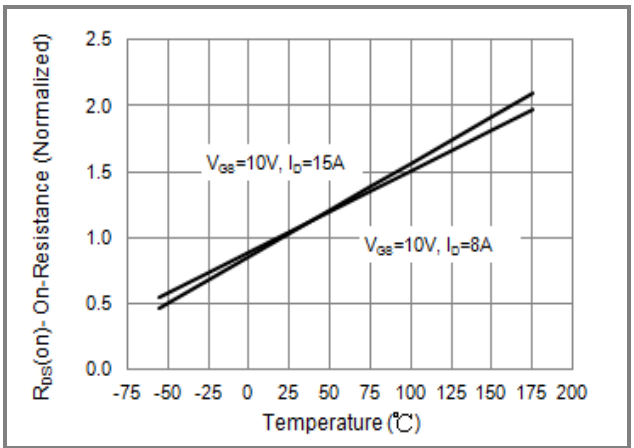


Fig.4 On-Resistance vs. Junction temperature

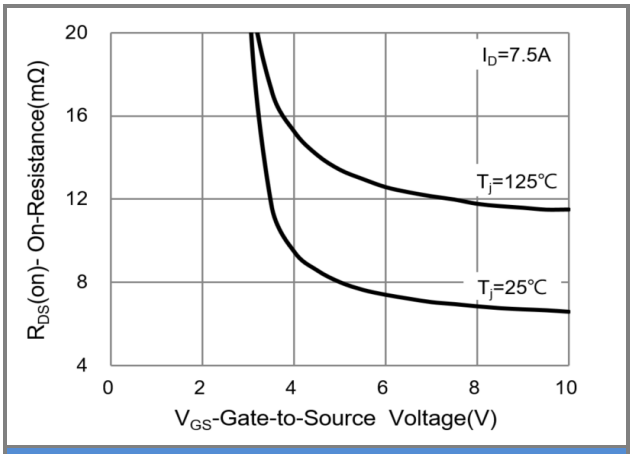


Fig.5 On-Resistance Variation with V_{GS}

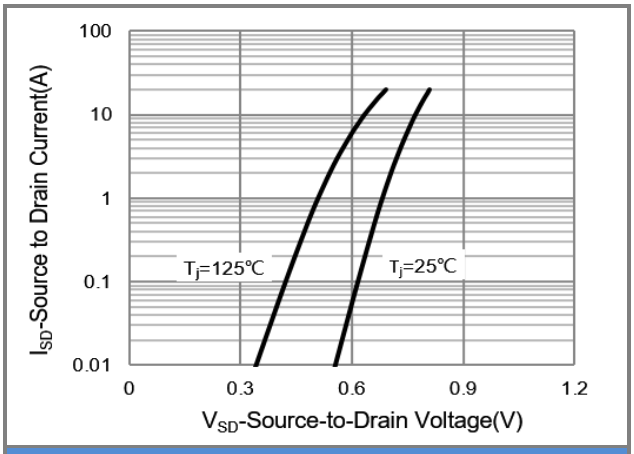


Fig.6 Source-Drain Diode Forward Voltage

PJQ5844-AU

TYPICAL CHARACTERISTIC CURVES

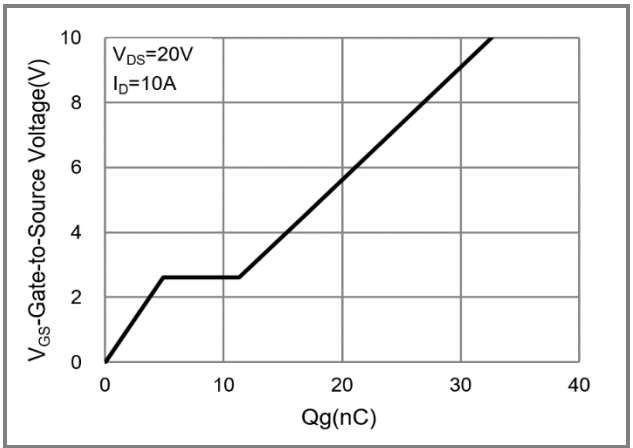


Fig.7 Gate-Charge Characteristics

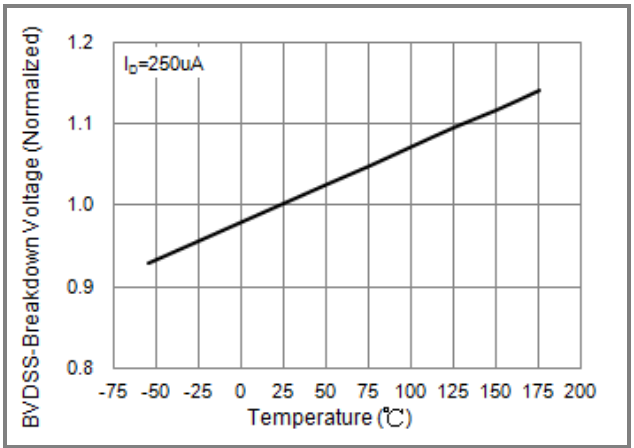


Fig.8 Breakdown Voltage Variation vs. Temperature

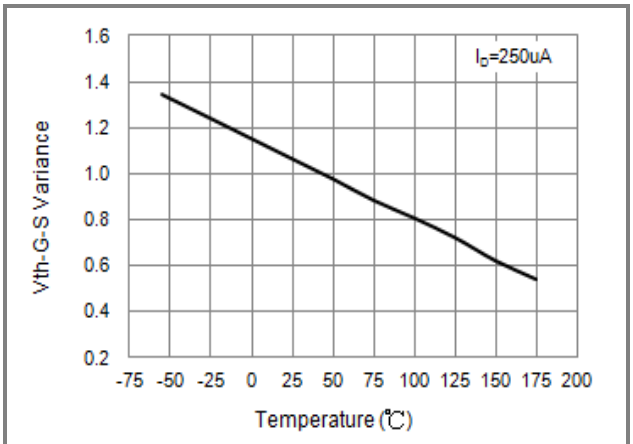


Fig.9 Threshold Voltage Variation with Temperature

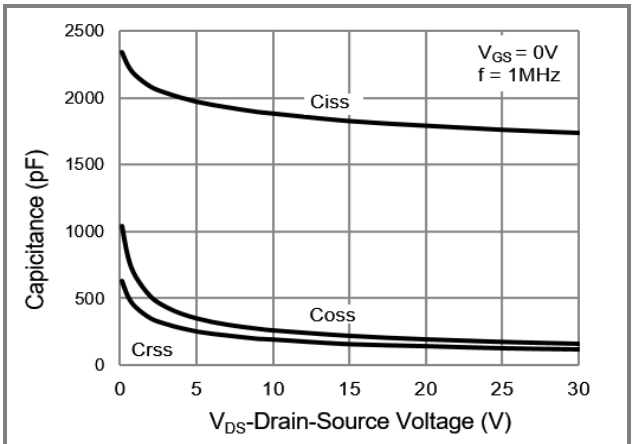


Fig.10 Capacitance vs. Drain-Source Voltage

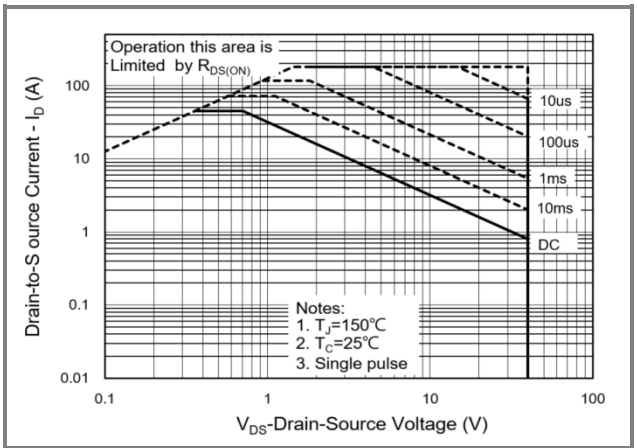


Fig.11 Maximum Safe Operating Area

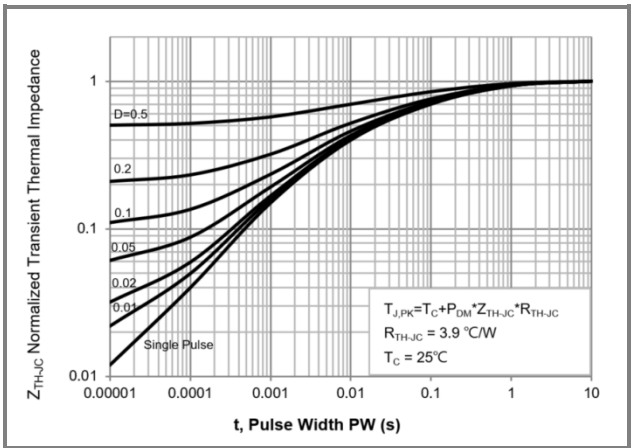


Fig.12 Normalized Transient Thermal Impedance

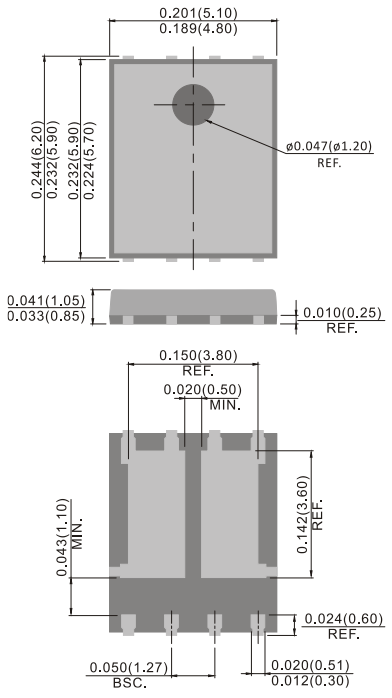
PJQ5844-AU

Product and Packing Information

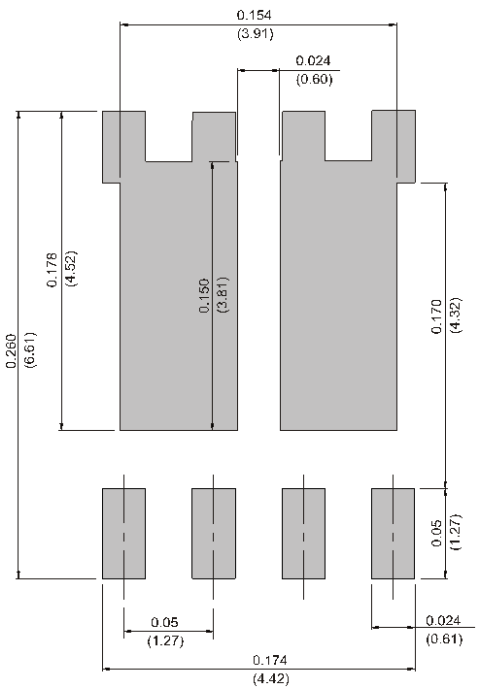
Part No.	Package Type	Packing Type	Marking
PJQ5844-AU	DFN5060B-8L	3000pcs / 13” reel	Q5844

Packaging Information & Mounting Pad Layout

DFN5060B-8L Dimension — Unit: inch(mm)



DFN5060B-8L Pad Layout — Unit: inch(mm)



PJQ5844-AU

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.