

# PJQ5858A-AU

## 60V Dual N-Channel Enhancement Mode MOSFET

<b>Voltage</b>	<b>60 V</b>	<b>Current</b>	<b>16 A</b>
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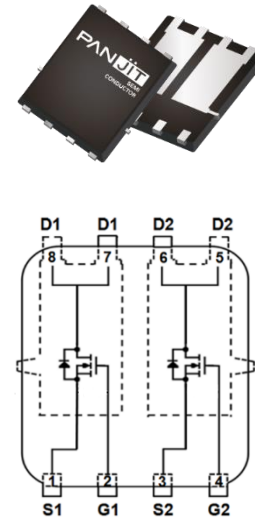
### Features

- $R_{DS(ON)}$ ,  $V_{GS}@10V$ ,  $I_D@8A<50m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V$ ,  $I_D@4A<60m\Omega$
- Excellent FOM
- Logic Level Drive
- 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 : 0.092 grams

DFN5060B-8L



## Maximum Ratings and Thermal Characteristics ( $T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>(Note 3)</sup>	$T_C=25^{\circ}C$	$I_D$	16	A
	$T_C=100^{\circ}C$		12	
Pulsed Drain Current <sup>(Note 1)</sup>	$T_C=25^{\circ}C$	$I_{DM}$	64	
Power Dissipation	$T_C=25^{\circ}C$	$P_D$	25	W
	$T_C=100^{\circ}C$		12.5	
Continuous Drain Current <sup>(Note 4)</sup>	$T_A=25^{\circ}C$	$I_D$	5	A
	$T_A=70^{\circ}C$		4.5	
Power Dissipation	$T_A=25^{\circ}C$	$P_D$	2.5	W
	$T_A=70^{\circ}C$		1.8	
Single Pulse Avalanche Energy <sup>(Note 5)</sup>		$E_{AS}$	1.6	mJ
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~175	$^{\circ}C$
Thermal Resistance <sup>(Note 4)</sup>	Junction to Case	$R_{\theta JC}$	6	$^{\circ}C/W$
	Junction to Ambient	$R_{\theta JA}$	60	



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## Electrical Characteristics (T<sub>A</sub>=25°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	60	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	1.7	2.5	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =8A	-	34	50	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A	-	38	60	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	-	-	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Dynamic <sup>(Note 6)</sup>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =48V, I <sub>D</sub> =8A, V <sub>GS</sub> =10V	-	13	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.1	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	2.9	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz	-	609	-	pF
Output Capacitance	C <sub>oss</sub>		-	43	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	14	-	
Gate resistance	R <sub>g</sub>	f=1MHz	-	3.7	-	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =48V, I <sub>D</sub> =8A, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω (Note 2,3)	-	8.4	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	33	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	32	-	
Turn-Off Fall Time	t <sub>f</sub>		-	27	-	
Drain-Source Diode						
Diode Forward Current	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	16	A
Pulsed Diode Forward Current	I <sub>SM</sub>		-	-	64	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V	-	0.72	1	V
Reverse Recovery Time	T <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =8A	-	25	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>	dI <sub>S</sub> /dt=100A/us	-	12	-	nC

### NOTES :

1. Pulse width≤100us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Chip capability with an R<sub>θJC</sub>= 6°C/W.
4. R<sub>θJA</sub> 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<sup>2</sup> with 2oz.square pad of copper.
5. The test condition is L=0.1mH, I<sub>AS</sub>=5.6A, V<sub>DD</sub>=30V, V<sub>GS</sub>=10V, Starting T<sub>J</sub>=25°C.
6. Guaranteed by design, not subject to production testing.



## PJQ5858A-AU

### TYPICAL CHARACTERISTIC CURVES

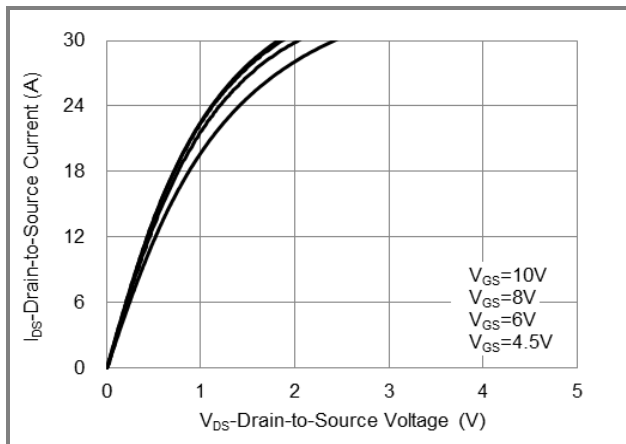


Fig.1 On-Region Characteristics

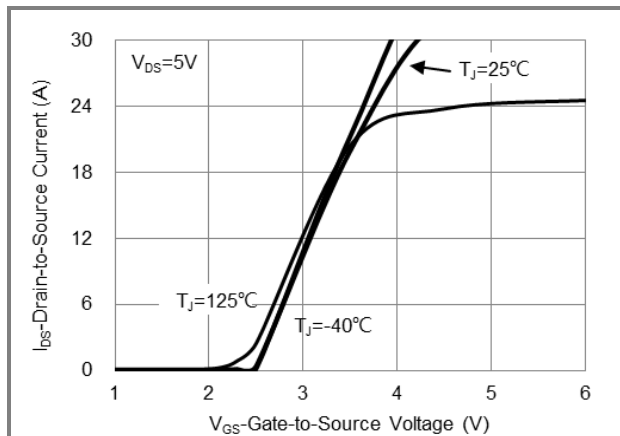


Fig.2 Transfer Characteristics

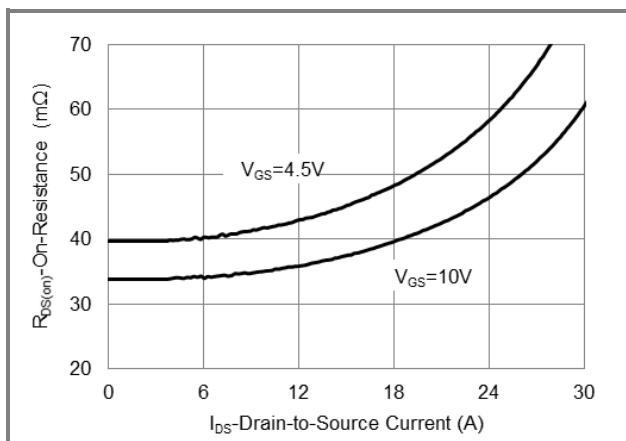


Fig.3 On-Resistance vs. Drain Current

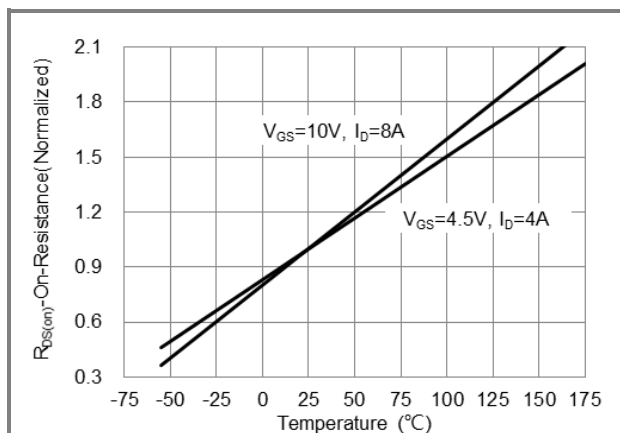


Fig.4 On-Resistance vs. Junction temperature

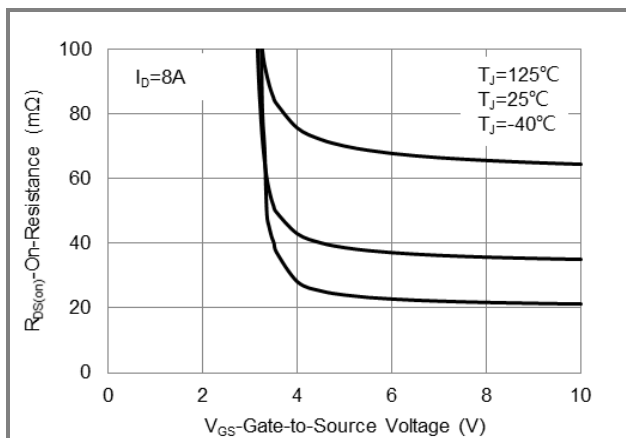


Fig.5 On-Resistance Variation with  $V_{GS}$

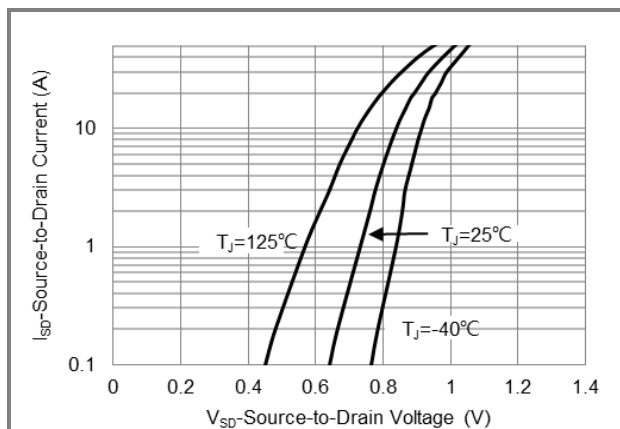


Fig.6 Source-Drain Diode Forward Voltage

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## TYPICAL CHARACTERISTIC CURVES

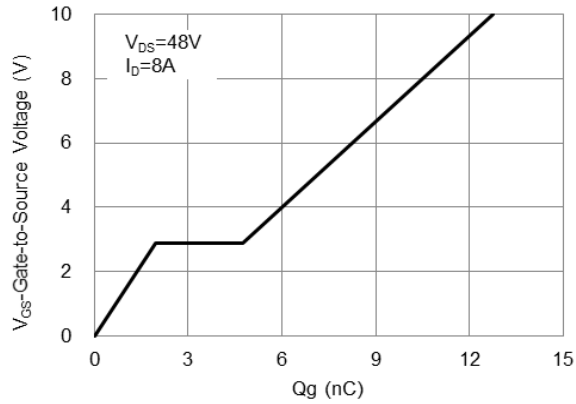


Fig.7 Gate-Charge Characteristics

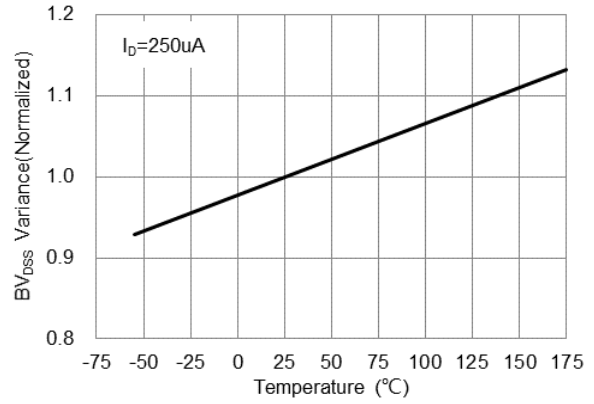


Fig.8 Breakdown Voltage Variation vs. Temperature

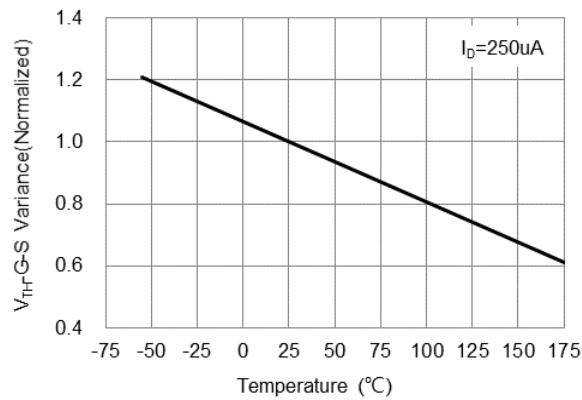


Fig.9 Threshold Voltage Variation with Temperature

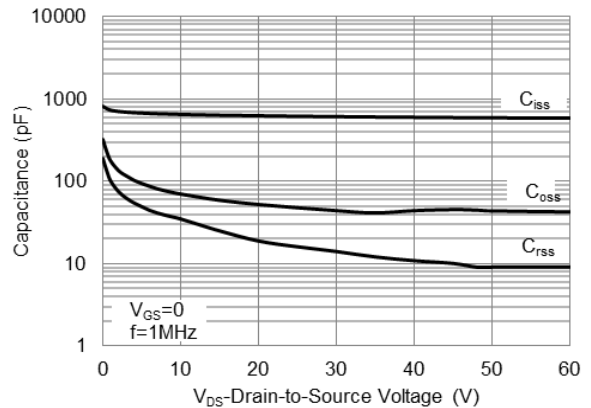


Fig.10 Capacitance vs. Drain-Source Voltage

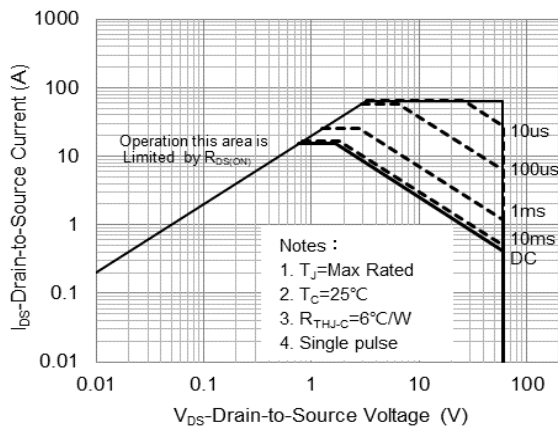


Fig.11 Maximum Safe Operating Area

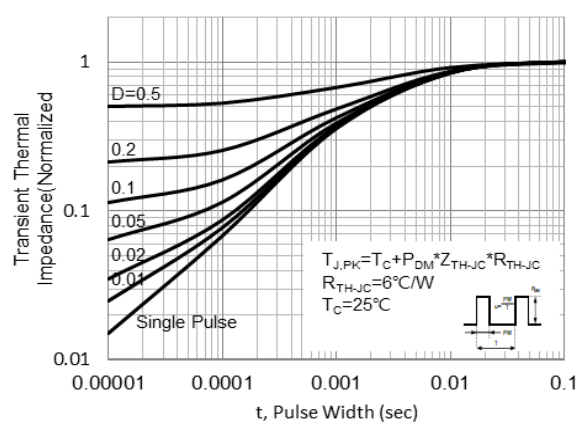


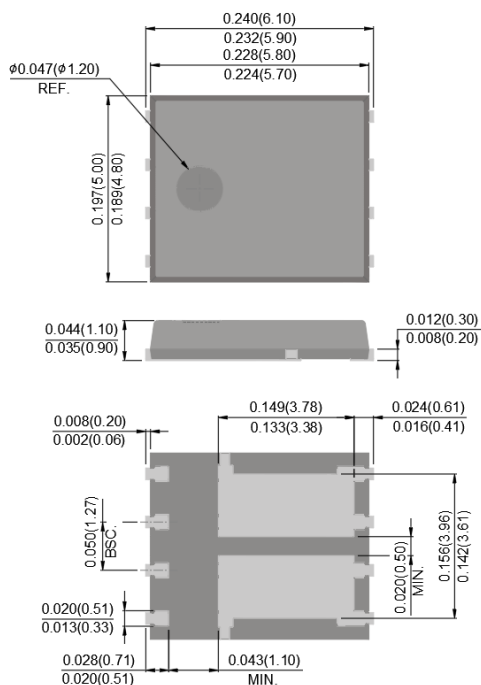
Fig.12 Normalized Transient Thermal Impedance

## Part No. Packing Code Version

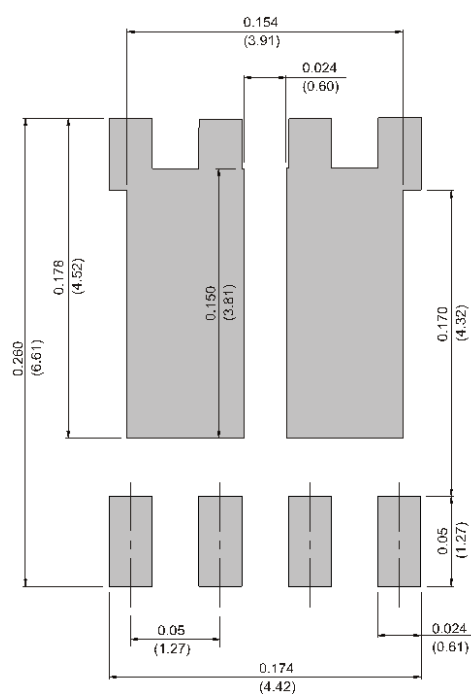
Part No. Packing Code	Package Type	Packing Type	Marking	Version
PJQ5858A-AU_R2_000A1	DFN5060B-8L	3K pcs / 13" reel	Q5858A	Halogen free RoHS compliant

## Packaging Information & Mounting Pad Layout

Unit: inch(mm)



Unit: inch(mm)





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