



PJQ5478A

100V N-Channel Enhancement Mode MOSFET

Voltage

100 V

Current

50 A

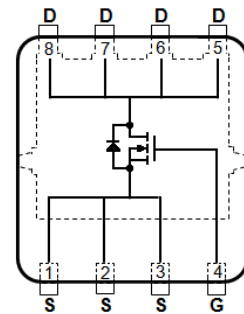
Features

- $R_{DS(ON)}$, $V_{GS}@10V, I_D@20A < 18m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V, I_D@15A < 20m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std.. (Halogen Free)

Mechanical Data

- Case: DFN5060-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026

DFN5060-8L



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

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	50
		$T_C=100^\circ\text{C}$	31
Pulsed Drain Current ^(Note 1)	I_{DM}	$T_C=25^\circ\text{C}$	150
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	83
		$T_C=100^\circ\text{C}$	33
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	7.5
		$T_A=70^\circ\text{C}$	6.0
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	2.0
		$T_A=70^\circ\text{C}$	1.3
Single Pulse Avalanche Energy ^(Note 6)	E_{AS}	156	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance ^(Note 4,5)	Junction to Case	$R_{\theta JC}$	1.5
	Junction to Ambient	$R_{\theta JA}$	62.5

- Limited only By Maximum Junction Temperature



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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	100	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1	1.6	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	15.5	18	mΩ
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =15A	-	16	20	mΩ
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V	-	-	1.0	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} =50V, I _D =30A, V _{GS} =10V (Note 3)	-	95	-	nC
Gate-Source Charge	Q _{gs}		-	11	-	
Gate-Drain Charge	Q _{gd}		-	18	-	
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1.0MHZ	-	5173	-	pF
Output Capacitance	C _{oss}		-	226	-	
Reverse Transfer Capacitance	C _{rss}		-	66	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, I _D =30A, V _{GS} =10V, R _G =3Ω (Note 3)	-	29	-	ns
Turn-On Rise Time	t _r		-	61	-	
Turn-Off Delay Time	t _{d(off)}		-	154	-	
Turn-Off Fall Time	t _f		-	84	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	50	A
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	0.8	1.3	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_{θJA} 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 inch² with 2oz.square pad of copper.
6. The test condition is L=0.5mH, I_{AS}=25A, V_{DD}=25V, V_{GS}=10V, R_G=25ohm, Starting T_J=25°C
7. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

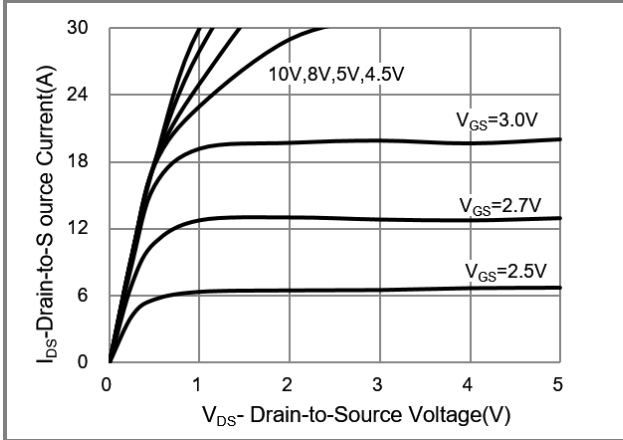


Fig.1 Output Characteristics

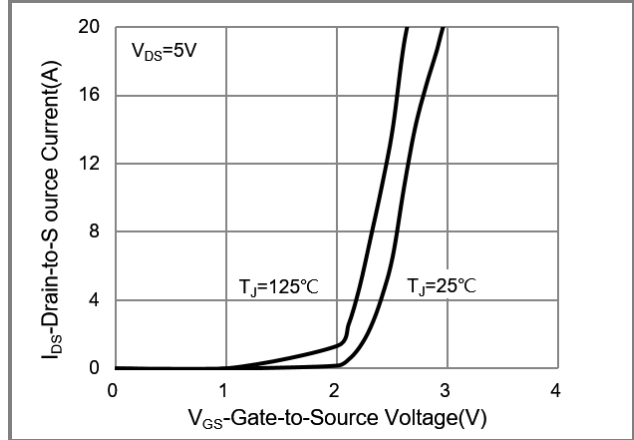


Fig.2 Transfer Characteristics

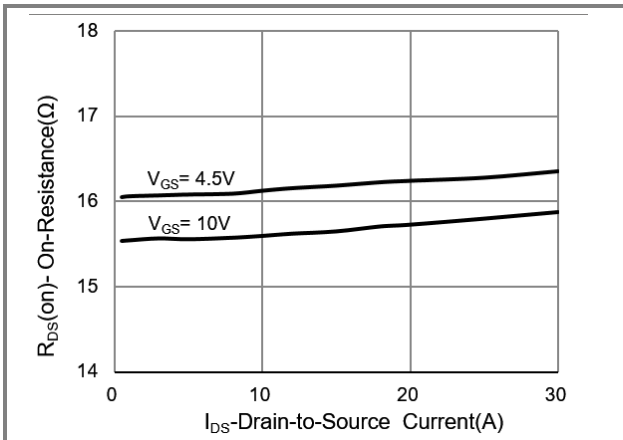


Fig.3 On-Resistance vs. Drain Current

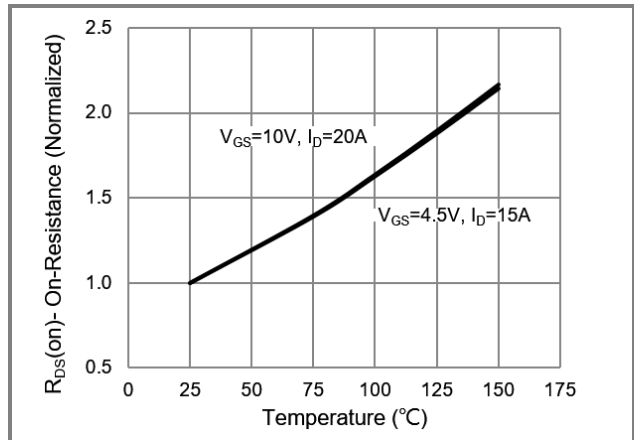


Fig.4 On-Resistance vs. Junction temperature

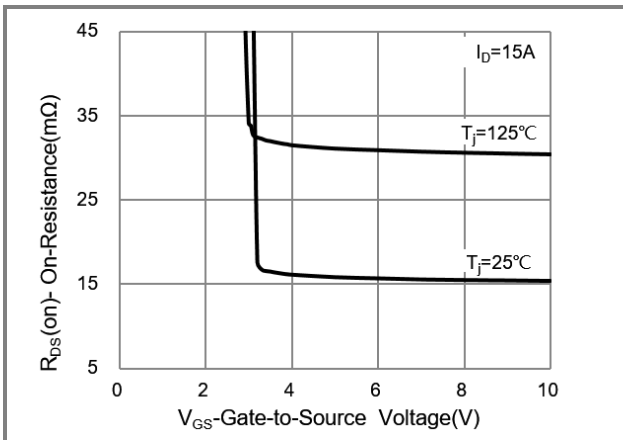


Fig.5 On-Resistance Variation with VGS.

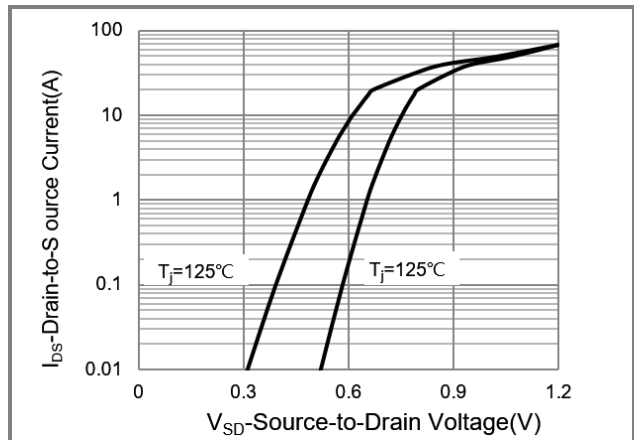


Fig.6 Source-Drain Diode Forward Voltage



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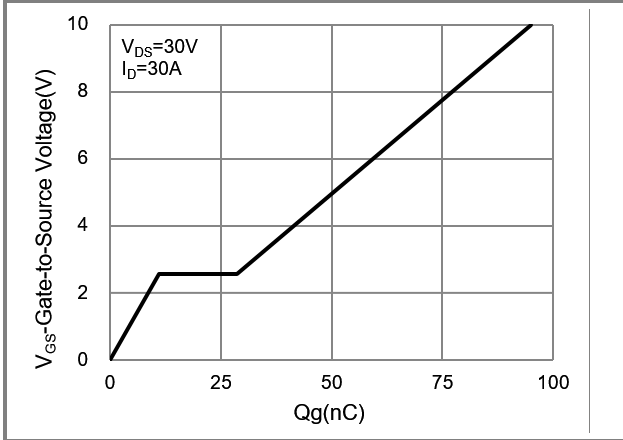


Fig.7 Gate-Charge Characteristics

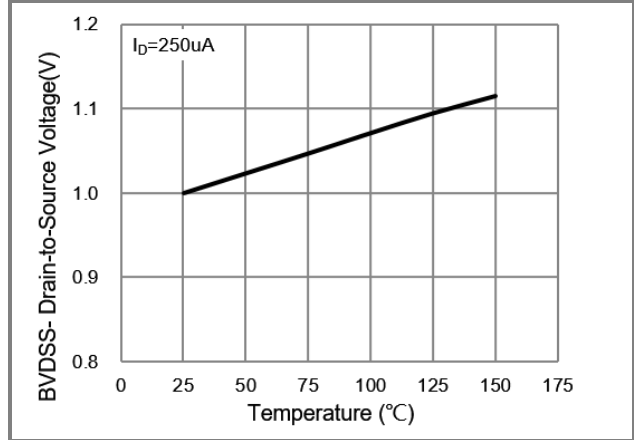


Fig.8 Breakdown Voltage Variation vs. Temperature

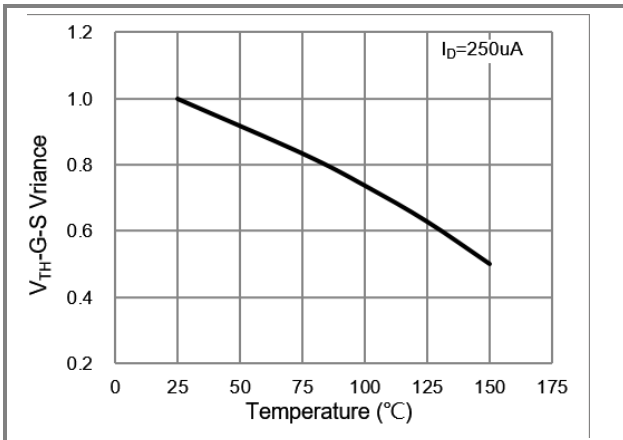


Fig.9 Threshold Voltage Variation with Temperature

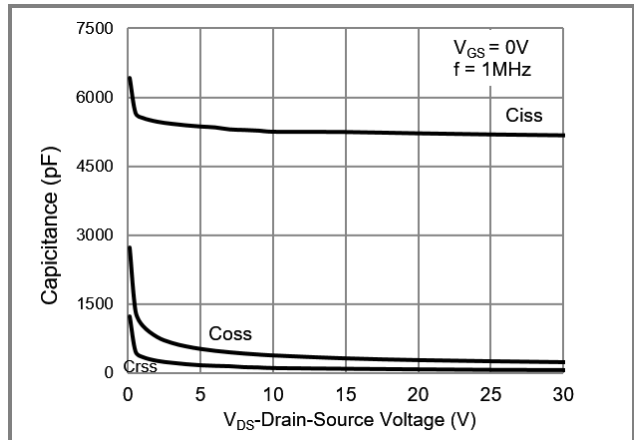


Fig.10 Capacitance vs. Drain-Source Voltage

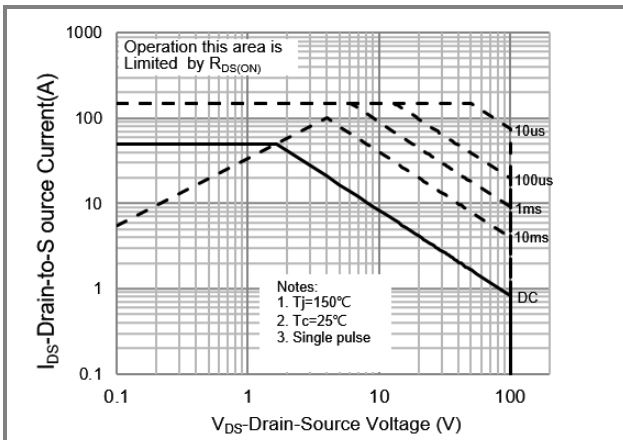


Fig.11 Maximum Safe Operating Area



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TYPICAL CHARACTERISTIC CURVES

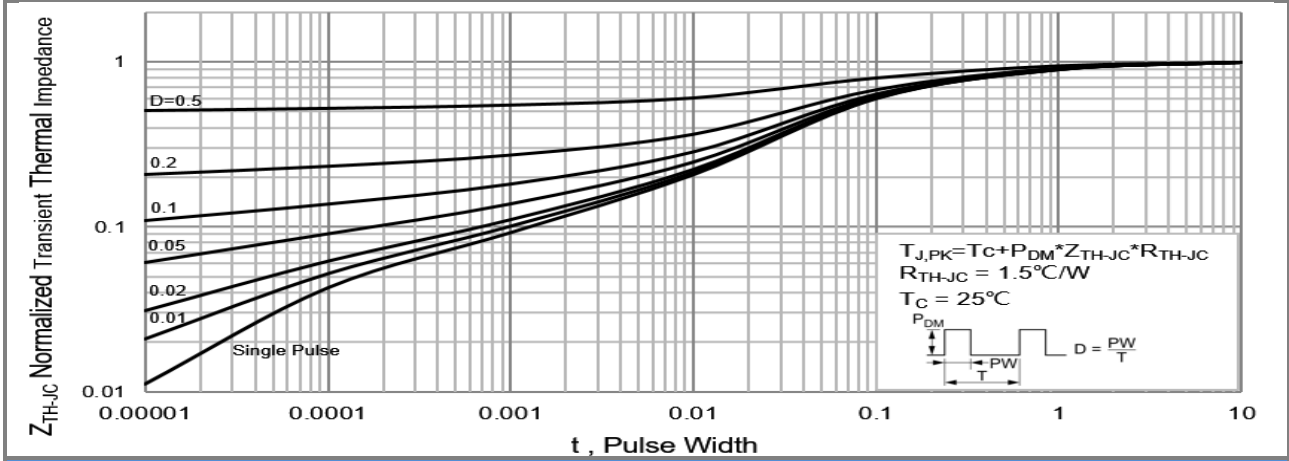


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

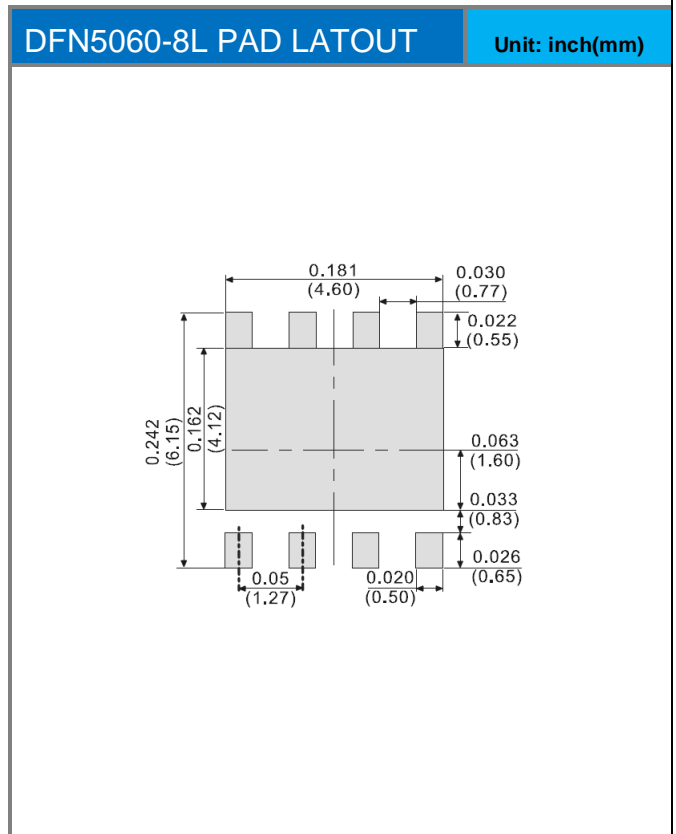
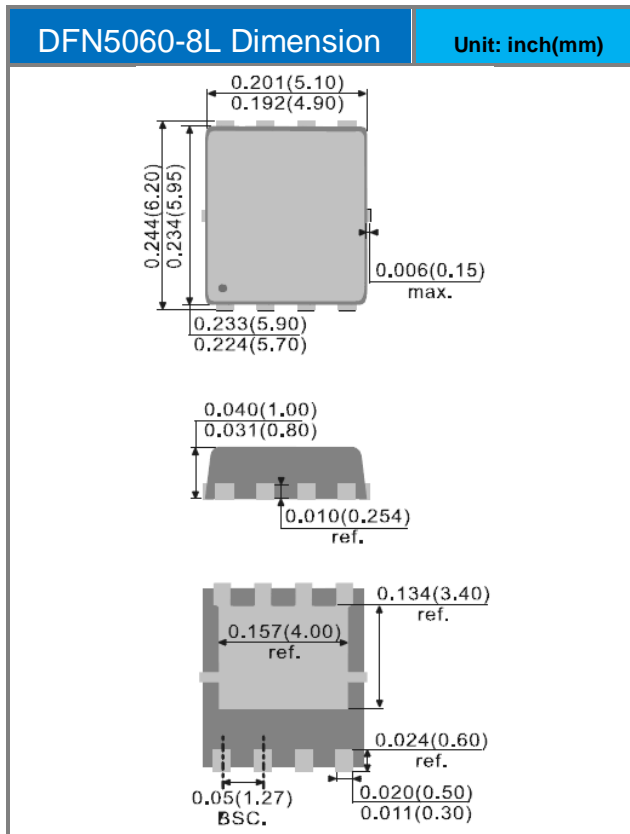


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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5478A_R2_00001	DFN5060-8L	3000pcs / 13" reel	Q5478A	Halogen free

Packaging Information & Mounting Pad Layout





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