



40V N-Channel Enhancement Mode MOSFET

Voltage

40 V

Current

21A

Features

- R_{DS(ON)}, V_{GS}@10V, I_D@12A<32mΩ
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_{D}@10A<40m\Omega$
- High switching speed
- 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: DFN5060-8L Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0028 ounces, 0.08 grams

DFN5060-8L

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

PARAMETER		SYMBOL	LIMIT	UNITS	
Drain-Source Voltage		V_{DS}	40		
Gate-Source Voltage		V_{GS}	<u>+</u> 20		
Continuous Drain Current (Note 4)	T _C =25°C	I _D	21		
	T _C =100°C		13.2	Α	
Pulsed Drain Current (Note 1)	T _C =25°C	I_{DM}	80	<u> </u>	
Power Dissipation	T _C =25°C	1	30	14/	
	T _C =100°C	₽D	15	W	
Continuous Drain Current (Note 4)	T _A =25°C	I _D	5.9		
	T _A =70°C		4.7	Α	
Power Dissipation	T _A =25°C	Po	2.4	147	
	T _A =70°C		1.6	W	
Operating Junction and Storage Temperature Range		T_{J} , T_{STG}	-55~175	°C	
Typical Thermal Resistance (Note 4,5)	Junction to Case	$R_{ heta JC}$	5	°C/W	
	Junction to Ambient	$R_{\theta JA}$	62.5		

Limited only By Maximum Junction Temperature





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_{DSS} $V_{GS}=0V$, $I_{D}=250uA$		-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{D}=250uA$	1.2	1.8	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =12A	-	26	32	mΩ
		V_{GS} =4.5V, I_{D} =10A	-	32	40	
Zero Gate Voltage Drain Current	I _{DSS}	V_{DS} =40V, V_{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	<u>+</u> 100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS} =20V, I_{D} =5A, V_{GS} =4.5V (Note 3)	-	4.4	-	nC
Gate-Source Charge	Q_{gs}		-	1.3	-	
Gate-Drain Charge	Q_gd		-	1.7	-	
Input Capacitance	Ciss	V _{DS} =25V, V _{GS} =0V,	-	425	-	pF
Output Capacitance	Coss		-	48	-	
Reverse Transfer Capacitance	Crss	f=1MHZ	-	36	-	
Turn-On Delay Time	td _(on)		-	9.4	-	ns
Turn-On Rise Time	t _r	V_{DD} =20V, I_{D} =1A, V_{GS} =4.5V, R_{G} =25 Ω	-	29	-	
Turn-Off Delay Time	td _(off)		-	21	-	
Turn-Off Fall Time	t _f	(-	29	-	
Drain-Source Diode						
Maximum Continuous Drain-Source			-	-	21	Α
Diode Forward Current	I _S					
Diode Forward Voltage	V_{SD}	I _S =1A, V _{GS} =0V	-	0.74	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. Rejah 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. Guaranteed by design, not subject to production testing.





TYPICAL CHARACTERISTIC CURVES

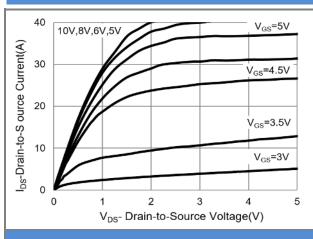


Fig.1 On-Region Characteristics

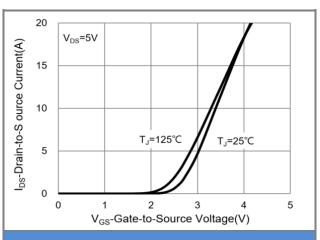


Fig.2 Transfer Characteristics

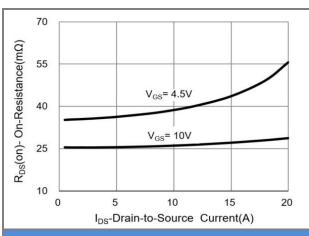


Fig.3 On-Resistance vs. Drain Current

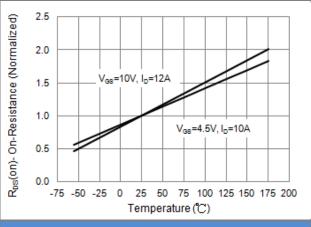


Fig.4 On-Resistance vs. Junction temperature

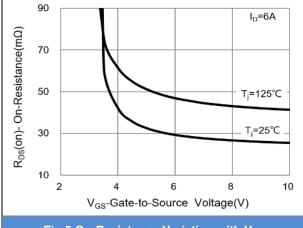
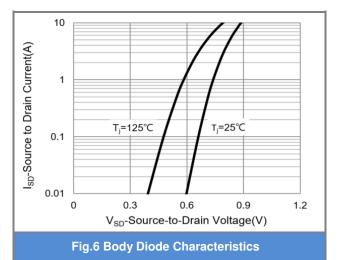


Fig.5 On-Resistance Variation with V_{GS}



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TYPICAL CHARACTERISTIC CURVES

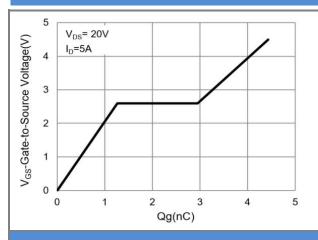


Fig.7 Gate-Charge Characteristics

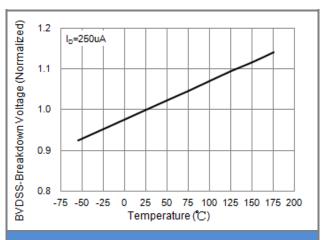


Fig.8 Breakdown Voltage Variation vs. Temperature

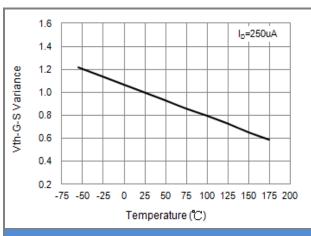


Fig.9 Threshold Voltage Variation with Temperature

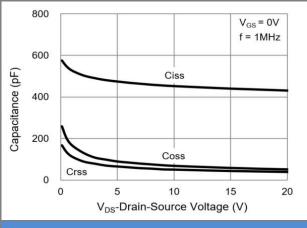


Fig.10 Capacitance vs. Drain-Source Voltage

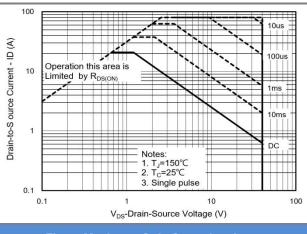


Fig.11 Maximum Safe Operating Area

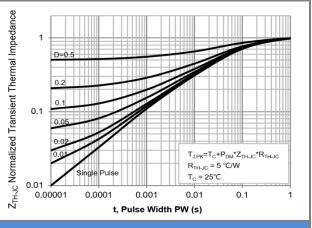


Fig.12 Normalized Transient Thermal Impedance

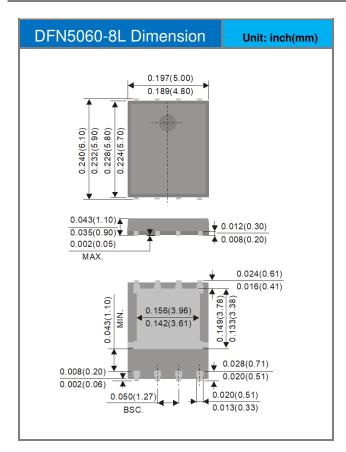


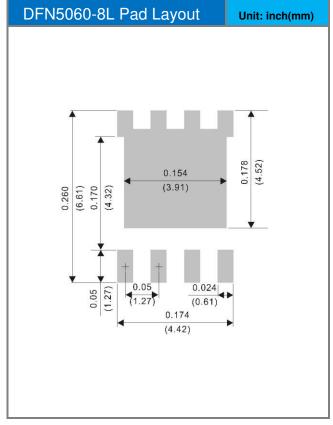


Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type	Marking	Version
PJQ5450-AU_R2_000A1	DFN5060-8L	3000pcs / 13" reel	Q5450	Halogen free

Packaging Information & Mounting Pad Layout









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