

PJQ2459EW-AU

40V P-Channel Enhancement Mode MOSFET

Voltage -40 V **Current** -22 A

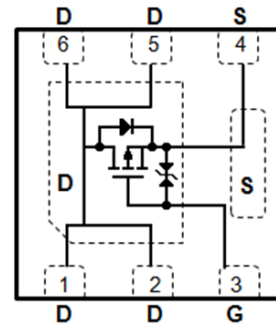
Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-6A < 40m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-4A < 59m\Omega$
- Excellent FOM
- ESD Protected
- Wettable flank terminals
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : DFN2020BW-6L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0096 grams

DFN2020BW-6L



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

PARAMETER	SYMBOL	LIMIT	UNIT	
Drain-Source Voltage	V_{DS}	-40	V	
Gate-Source Voltage	V_{GS}	± 25		
Continuous Drain Current ^(Note 3)	I_D	$T_C=25^\circ C$	-22	A
		$T_C=100^\circ C$	-15	
Pulsed Drain Current ^(Note 1)	I_{DM}	$T_C=25^\circ C$ -46		
Power Dissipation	P_D	$T_C=25^\circ C$	35	W
		$T_C=100^\circ C$	17	
Continuous Drain Current ^(Note 4)	I_D	$T_A=25^\circ C$	-5.8	A
		$T_A=70^\circ C$	-4.8	
Power Dissipation	P_D	$T_A=25^\circ C$	2.4	W
		$T_A=70^\circ C$	1.7	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~175	$^\circ C$	
Thermal Resistance ^(Note 4)	Junction to Case	$R_{\theta JC}$	4.3	$^\circ C/W$
	Junction to Ambient	$R_{\theta JA}$	62.5	

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
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	-1.8	-2.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-6A	-	32	40	mΩ
		V _{GS} =-4.5V, I _D =-4A	-	45	59	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±25V, V _{DS} =0V	-	-	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q _g	V _{DS} =-32V, I _D =-6A, V _{GS} =-10V (Note 2)	-	17	25	nC
Gate-Source Charge	Q _{gs}		-	2.5	-	
Gate-Drain Charge	Q _{gd}		-	3.7	-	
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, f=1MHz	-	776	1100	pF
Output Capacitance	C _{oss}		-	79	140	
Reverse Transfer Capacitance	C _{rss}		-	58	110	
Gate resistance	R _g	f=1MHz	-	14	-	Ω
Turn-On Delay Time	t _{d(on)}	V _{DS} =-32V, I _D =-6A, V _{GS} =-10V, R _G =3Ω (Note 2)	-	4.2	-	ns
Turn-On Rise Time	t _r		-	3.7	-	
Turn-Off Delay Time	t _{d(off)}		-	39	-	
Turn-Off Fall Time	t _f		-	47	-	
Drain-Source Diode						
Diode Forward Current	I _S	T _C =25°C	-	-	-22	A
Pulsed Diode Forward Current	I _{SM}	(Package Limit)	-	-	-46	
Diode Forward Voltage	V _{SD}	I _S =-6A, V _{GS} =0V	-	-0.85	-1.3	V
Reverse Recovery Time	T _{rr}	V _{DD} =-32V, V _{GS} =0V	-	11	-	ns
Reverse Recovery Charge	Q _{rr}	I _S =-6A, dI _S /dt=100A/us	-	5	-	nC

NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. 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.
5. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

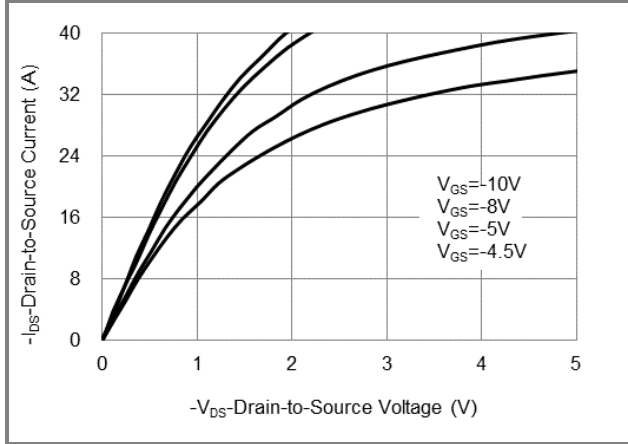


Fig.1 On-Region Characteristics

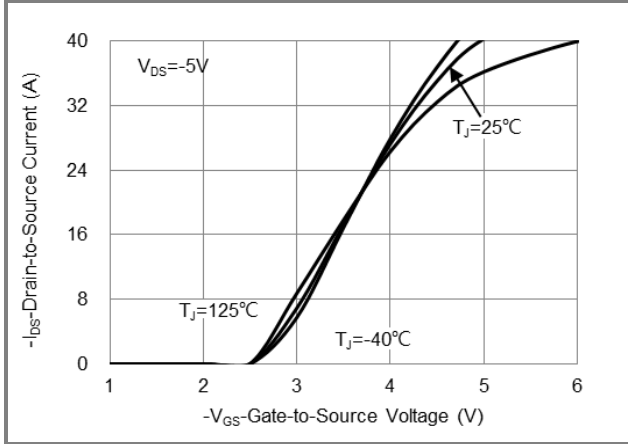


Fig.2 Transfer Characteristics

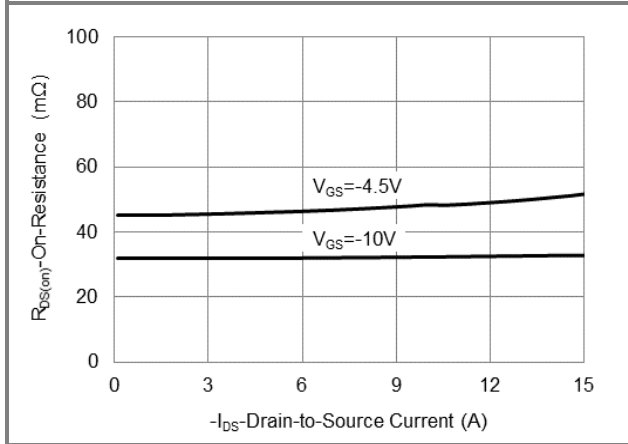


Fig.3 On-Resistance vs. Drain Current

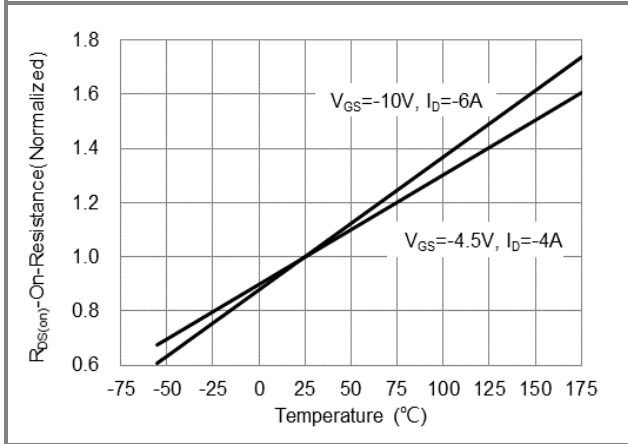


Fig.4 On-Resistance vs. Junction temperature

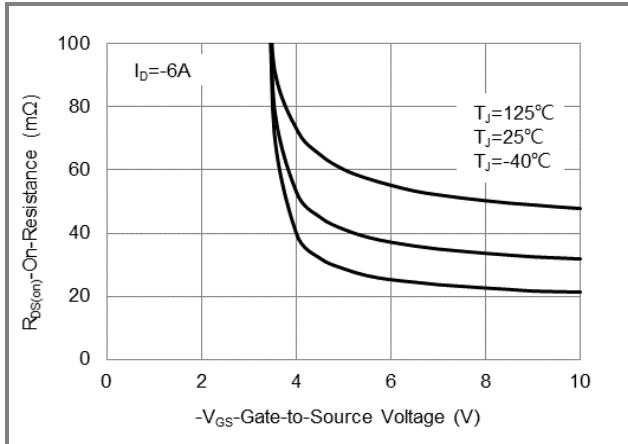


Fig.5 On-Resistance Variation with V_GS

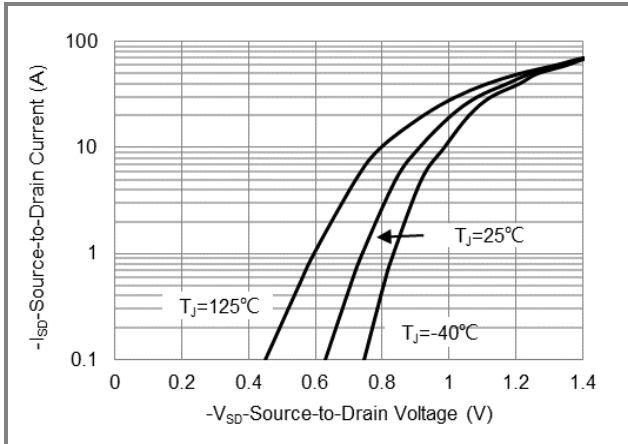


Fig.6 Source-Drain Diode Forward Voltage

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TYPICAL CHARACTERISTIC CURVES

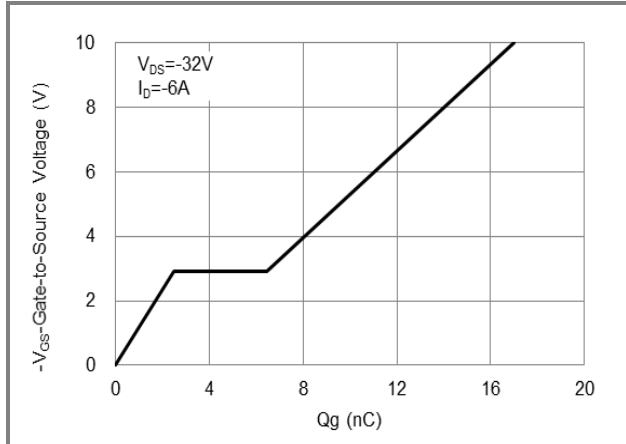


Fig.7 Gate-Charge Characteristics

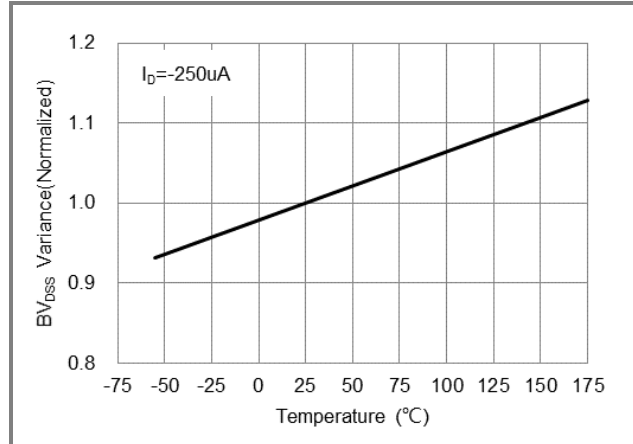


Fig.8 Breakdown Voltage Variation vs. Temperature

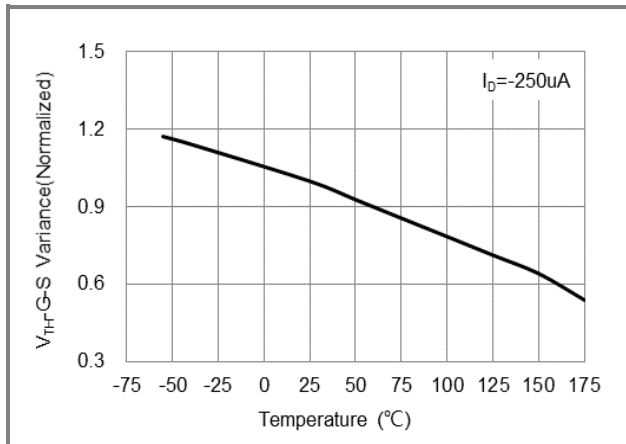


Fig.9 Threshold Voltage Variation with Temperature

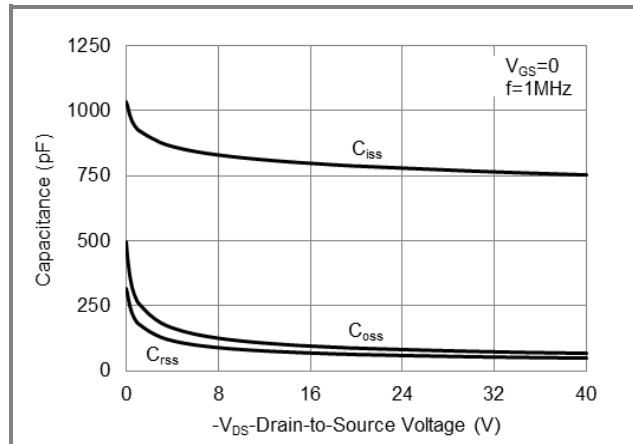


Fig.10 Capacitance vs. Drain-Source Voltage

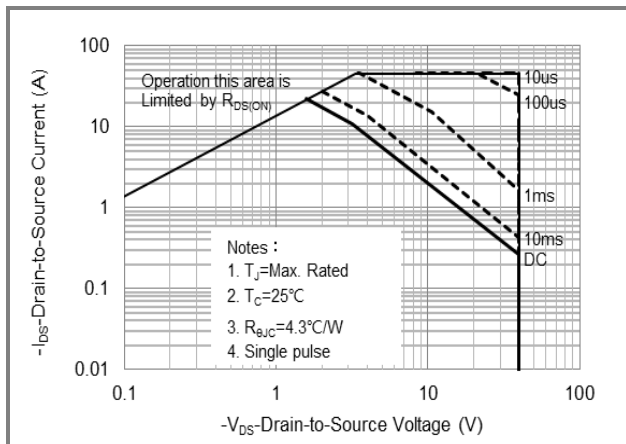


Fig.11 Maximum Safe Operating Area

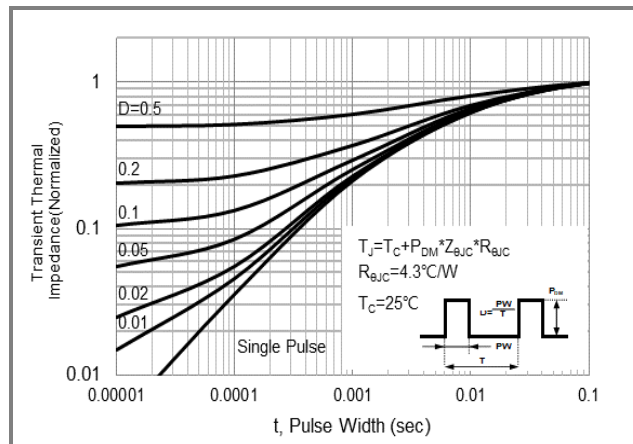


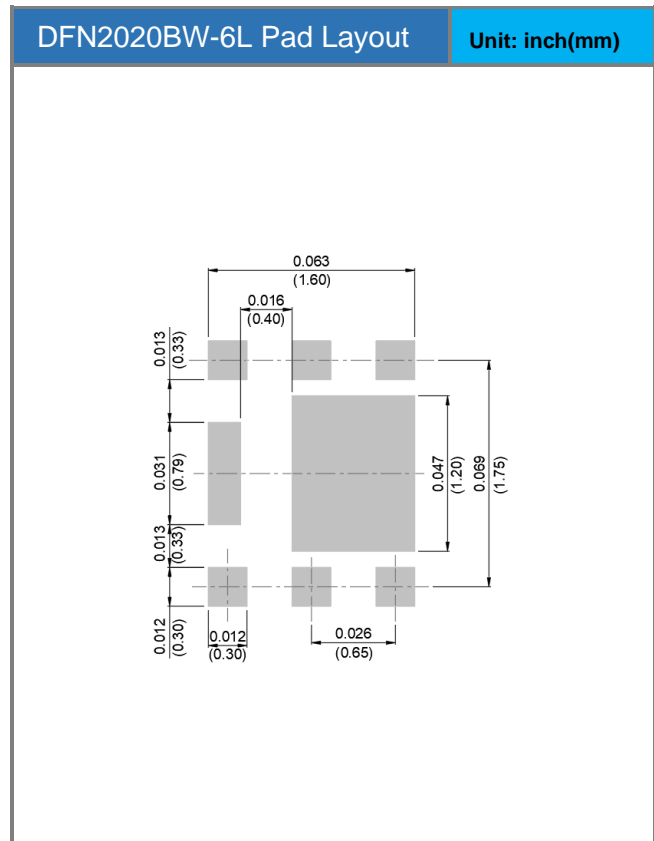
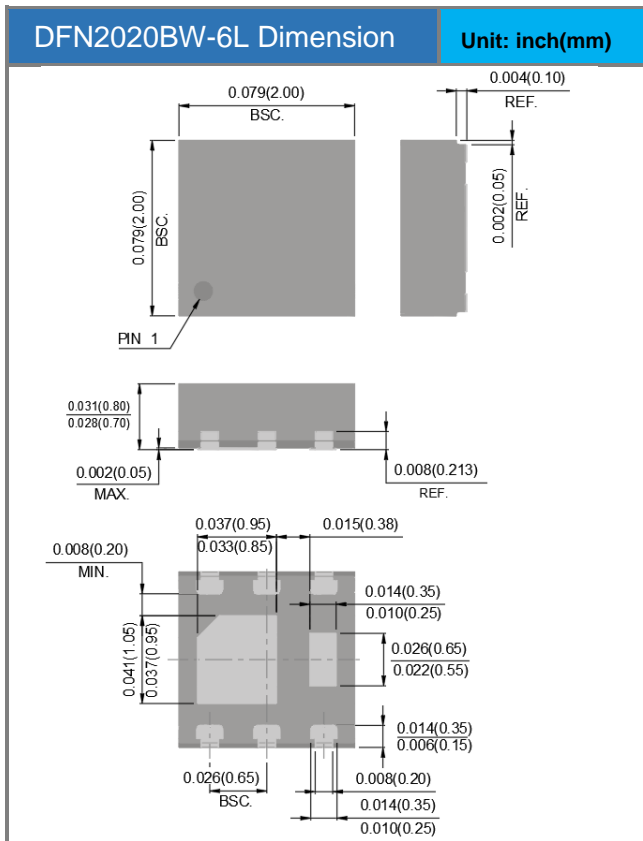
Fig.12 Normalized Transient Thermal Impedance

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJQ2459EW-AU	DFN2020BW-6L	3K pcs / 7" reel	59E

Packaging Information & Mounting Pad Layout



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