

PJQ4540S6CP-AU

40V N-Channel Enhancement Mode MOSFET

Voltage

40 V

Current

168 A

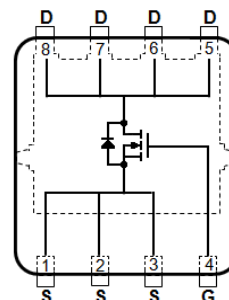
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@20A < 1.9m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@15A < 3.1m\Omega$
- 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 : DFN3333-8L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.03 grams

DFN3333-8L



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

		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^(Note 3)	$T_C=25^{\circ}C$	I_D	168	A
	$T_C=100^{\circ}C$		118	
Pulsed Drain Current ^(Note 1)	$T_C=25^{\circ}C$	I_{DM}	660	
Power Dissipation	$T_C=25^{\circ}C$	P_D	97	W
	$T_C=100^{\circ}C$		48	
Continuous Drain Current ^(Note 4)	$T_A=25^{\circ}C$	I_D	27	A
	$T_A=70^{\circ}C$		22.6	
Power Dissipation	$T_A=25^{\circ}C$	P_D	2.5	W
	$T_A=70^{\circ}C$		1.8	
Single Pulse Avalanche Current ^(Note 5)		I_{AS}	22	A
Single Pulse Avalanche Energy ^(Note 5)		E_{AS}	200	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~175	$^{\circ}C$
Thermal Resistance ^(Note 4)	Junction to Case	$R_{\theta JC}$	1.55	$^{\circ}C/W$
	Junction to Ambient	$R_{\theta JA}$	60	

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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	40	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.2	1.6	2.2	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	1.5	1.9	mΩ
		V _{GS} =4.5V, I _D =15A	-	2.4	3.1	
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 6)						
Total Gate Charge	Q _g	V _{DS} =32V, I _D =20A, V _{GS} =10V ^(Note 2,3)	-	55	72	nC
Gate-Source Charge	Q _{gs}		-	5.6	-	
Gate-Drain Charge	Q _{gd}		-	10.8	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	2283	3000	pF
Output Capacitance	C _{oss}		-	722	1100	
Reverse Transfer Capacitance	C _{rss}		-	68	120	
Gate resistance	R _g	f=1MHz	-	2	-	Ω
Turn-On Delay Time	td _(on)	V _{DS} =32V, I _D =20A, V _{GS} =10V, R _G =3Ω ^(Note 2,3)	-	8.2	-	ns
Turn-On Rise Time	t _r		-	14	-	
Turn-Off Delay Time	td _(off)		-	56	-	
Turn-Off Fall Time	t _f		-	23	-	
Drain-Source Diode						
Diode Forward Current	I _S	T _C =25°C (Package Limit)	-	-	113	A
Pulsed Diode Forward Current	I _{SM}		-	-	660	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	0.75	1.3	V
Reverse Recovery Time	T _{rr}	V _{DD} =20V, V _{GS} =0V	-	40	-	ns
Reverse Recovery Charge	Q _{rr}	I _S =20A, dI _S /dt=100A/us	-	23	-	nC

NOTES :

1. Pulse width≤100us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Chip capability with an R_{θJC}=1.55°C/W.
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. E_{AS} is calculated based on the condition of L=1mH, I_{AS}=20A, V_{DD}=30V, V_{GS}=10V. 100% test at L=0.5mH, I_{AS}=22A in production.
6. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

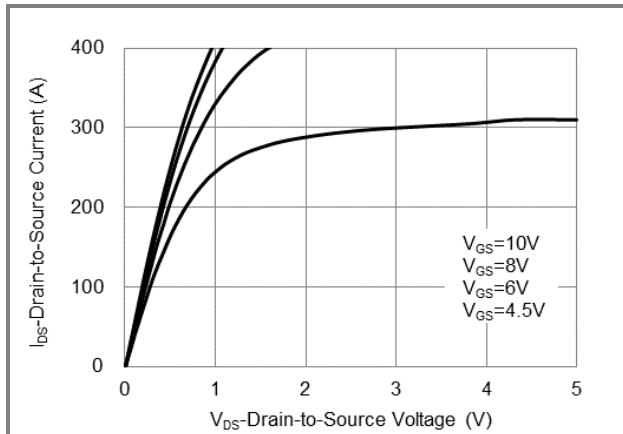


Fig.1 On-Region Characteristics

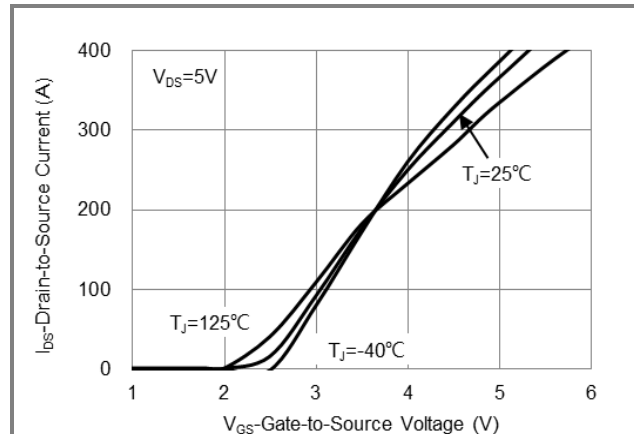


Fig.2 Transfer Characteristics

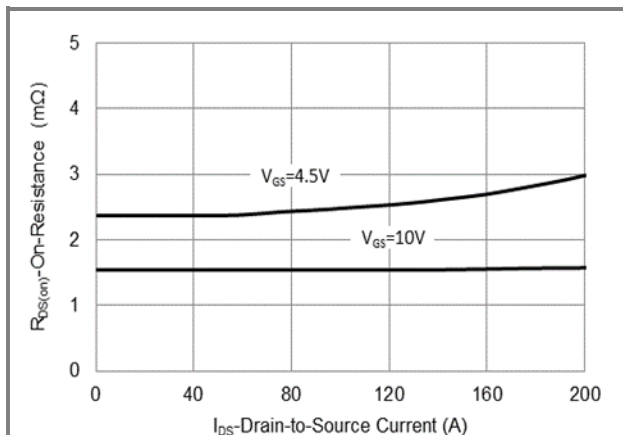


Fig.3 On-Resistance vs. Drain Current

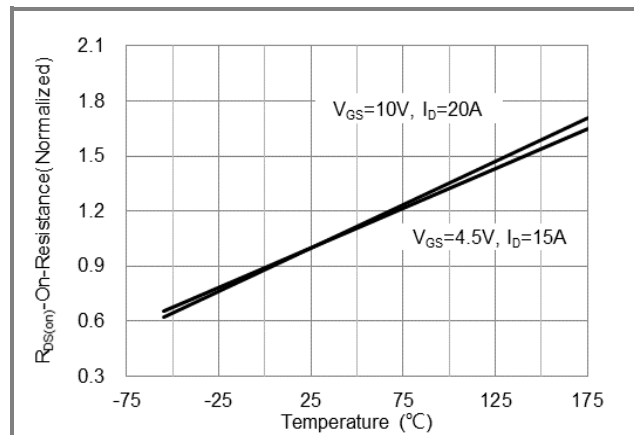


Fig.4 On-Resistance vs. Junction temperature

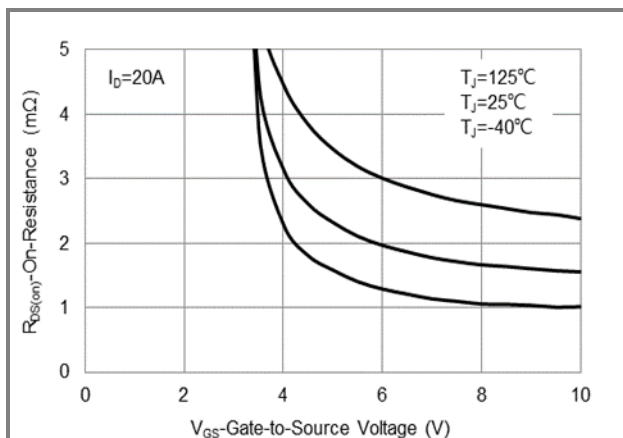


Fig.5 On-Resistance Variation with V_{GS}

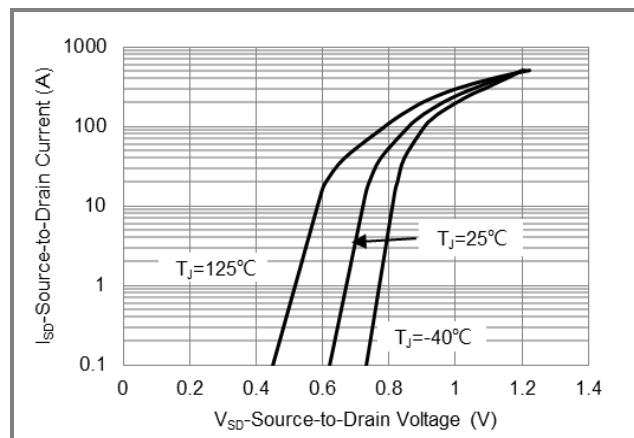
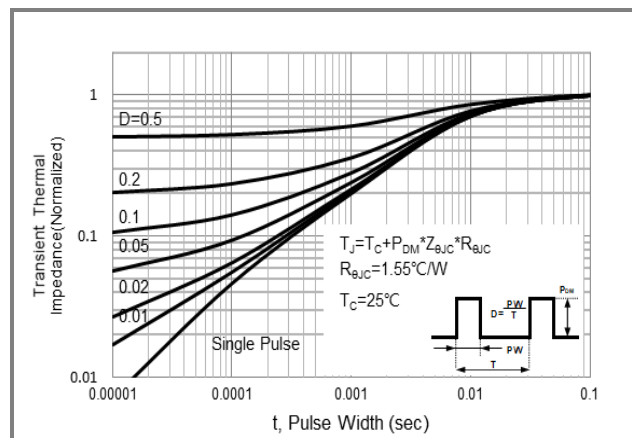
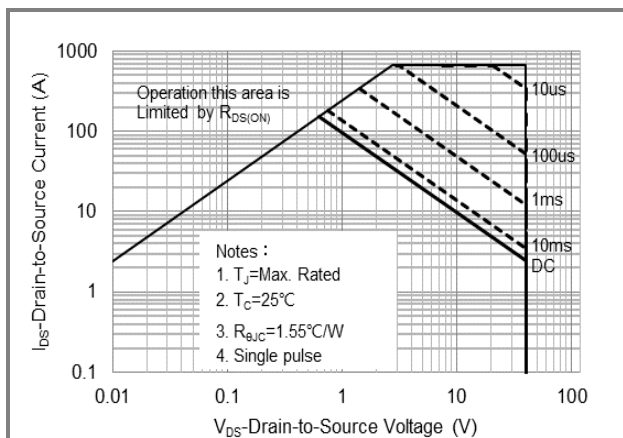
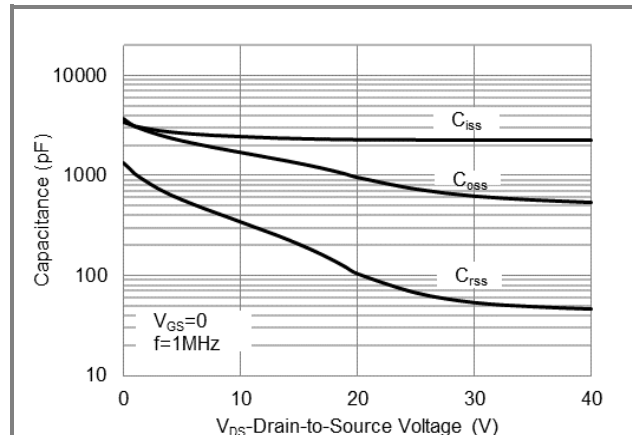
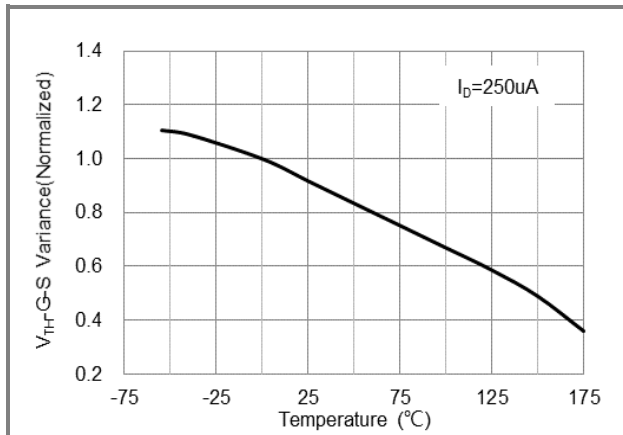
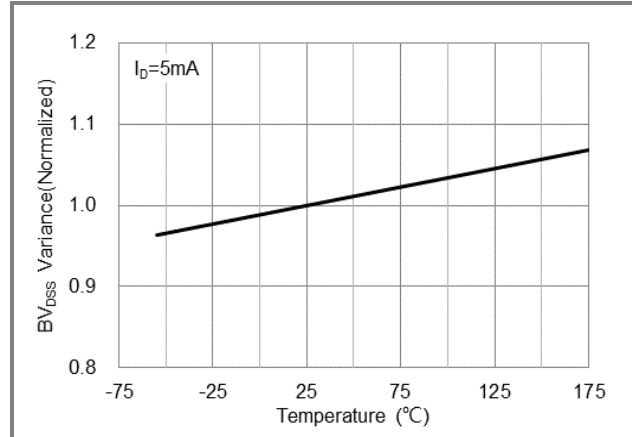
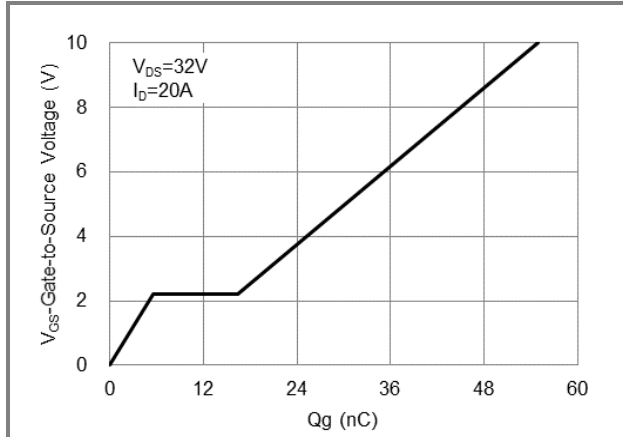


Fig.6 Source-Drain Diode Forward Voltage

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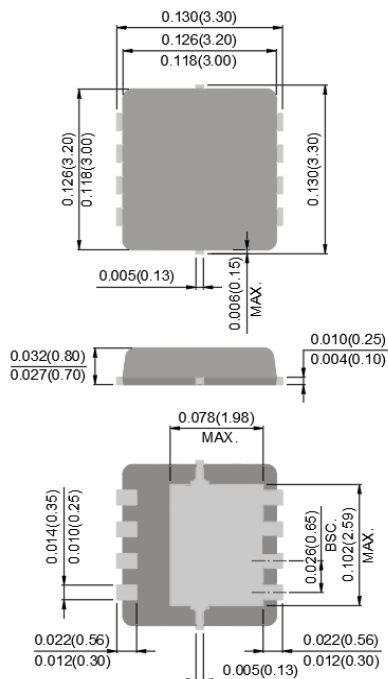
Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJQ4540S6CP-AU	DFN3333-8L	5K pcs / 13" reel	540K

Packaging Information & Mounting Pad Layout

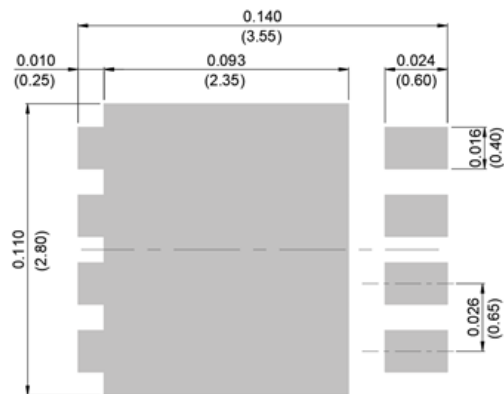
DFN3333-8L Dimension

Unit: inch(mm)



DFN3333-8L Pad Layout

Unit: inch(mm)



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