

PJQ4518S6CP-AU

30V N-Channel Enhancement Mode MOSFET

Voltage

30 V

Current

178 A

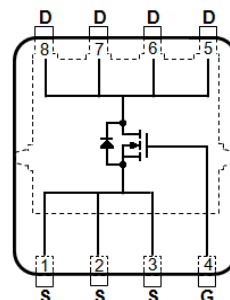
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@20A < 1.8m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@15A < 2.7m\Omega$
- 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)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^(Note 3)	$T_C=25^{\circ}C$	I_D	178	A
	$T_C=100^{\circ}C$		126	
Pulsed Drain Current ^(Note 1)	$T_C=25^{\circ}C$	I_{DM}	720	
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	29	A
	$T_A=70^{\circ}C$		24	
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	

PJQ4518S6CP-AU

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	30	-	-	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	-	1.4	1.8	mΩ
		V _{GS} =4.5V, I _D =15A	-	2.1	2.7	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, 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} =24V, I _D =20A, V _{GS} =10V	-	43	57	nC
Gate-Source Charge	Q _{gs}		-	5.4	-	
Gate-Drain Charge	Q _{gd}		-	5.5	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	2249	2925	pF
Output Capacitance	C _{oss}		-	716	1002	
Reverse Transfer Capacitance	C _{rss}		-	67	120	
Gate resistance	R _g	f=1MHz	-	2.5	-	Ω
Turn-On Delay Time	td _(on)	V _{DS} =24V, I _D =20A, V _{GS} =10V, R _G =3Ω	-	8.2	-	ns
Turn-On Rise Time	t _r		-	10.4	-	
Turn-Off Delay Time	td _(off)		-	41	-	
Turn-Off Fall Time	t _f		-	16	-	
Drain-Source Diode						
Diode Forward Current	I _S	T _C =25°C (Package Limit)	-	-	118	A
Pulsed Diode Forward Current	I _{SM}		-	-	720	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	0.75	1.3	V
Reverse Recovery Time	T _{rr}	V _{DD} =24V, V _{GS} =0V	-	35	-	ns
Reverse Recovery Charge	Q _{rr}	I _S =20A, dI _S /dt=100A/us	-	19	-	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.

PJQ4518S6CP-AU

TYPICAL CHARACTERISTIC CURVES

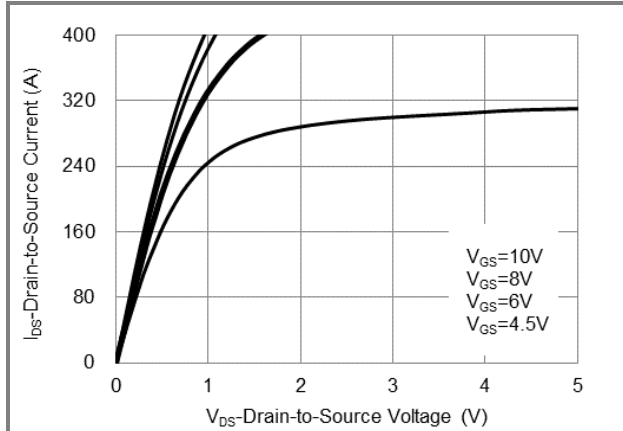


Fig.1 On-Region Characteristics

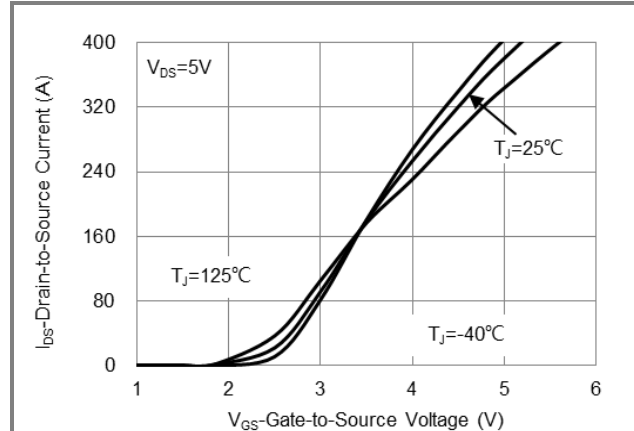


Fig.2 Transfer Characteristics

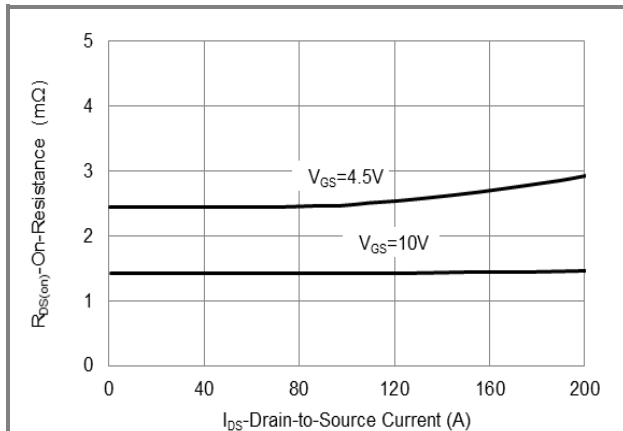


Fig.3 On-Resistance vs. Drain Current

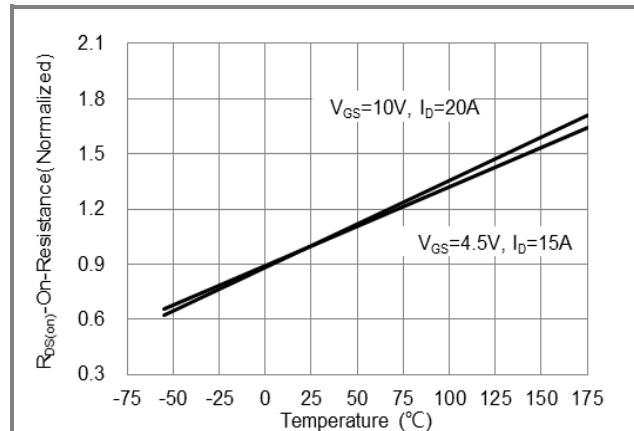


Fig.4 On-Resistance vs. Junction temperature

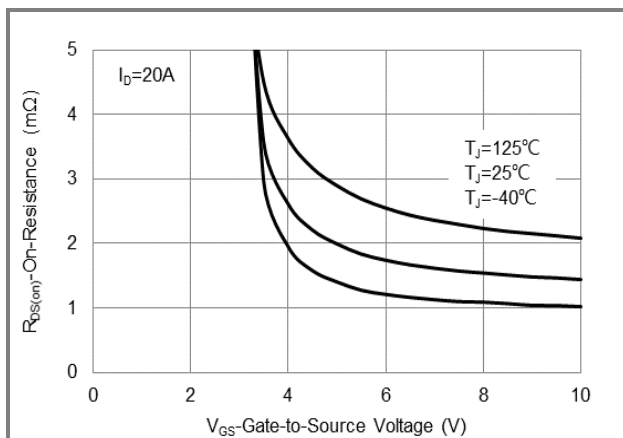


Fig.5 On-Resistance Variation with V_{GS}

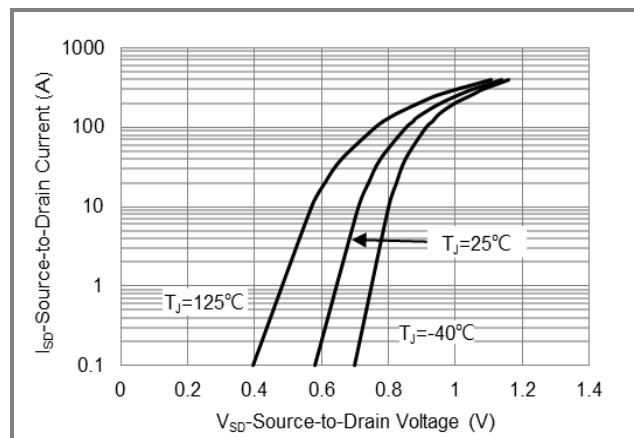


Fig.6 Source-Drain Diode Forward Voltage

PJQ4518S6CP-AU

TYPICAL CHARACTERISTIC CURVES

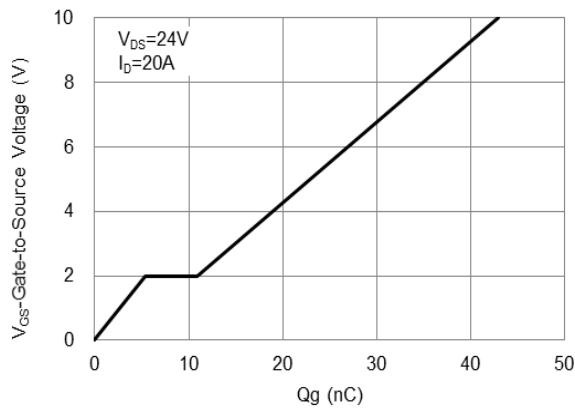


Fig.7 Gate-Charge Characteristics

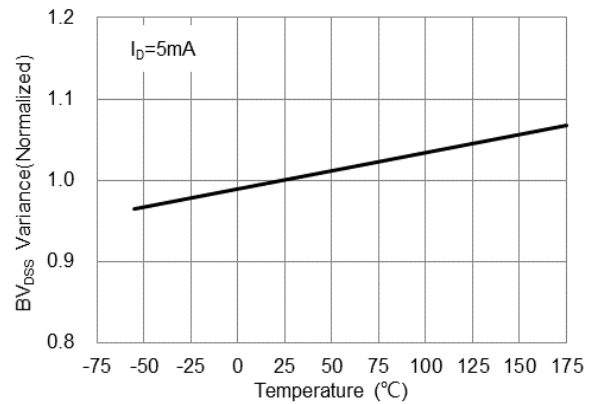


Fig.8 Breakdown Voltage Variation vs. Temperature

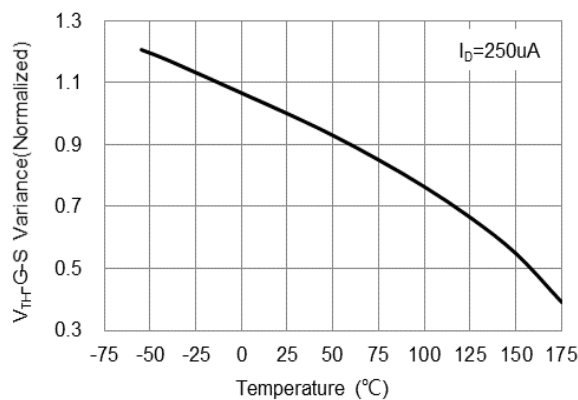


Fig.9 Threshold Voltage Variation with Temperature

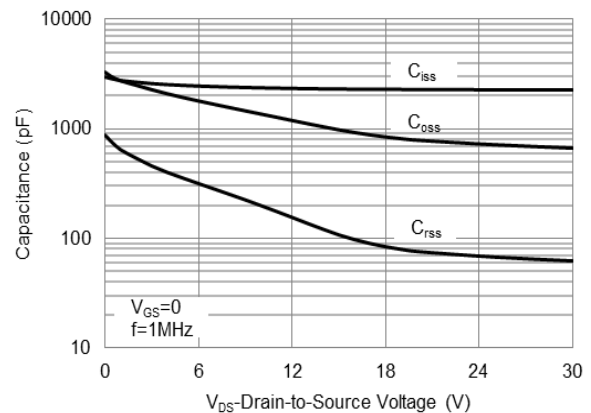


Fig.10 Capacitance vs. Drain-Source Voltage

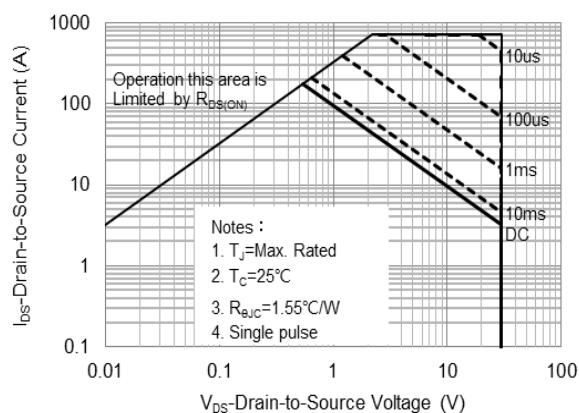


Fig.11 Maximum Safe Operating Area

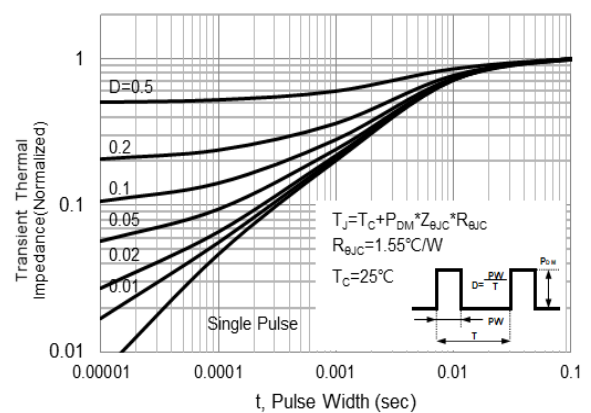


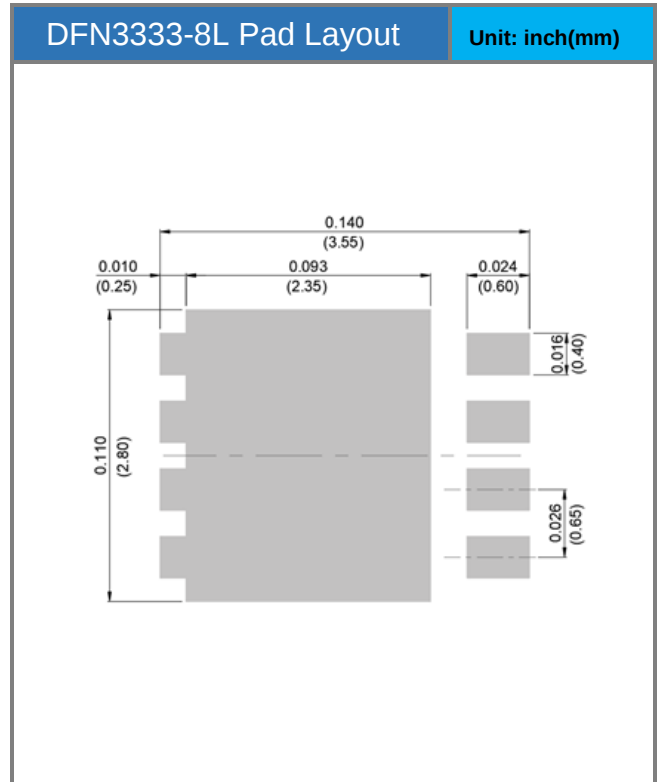
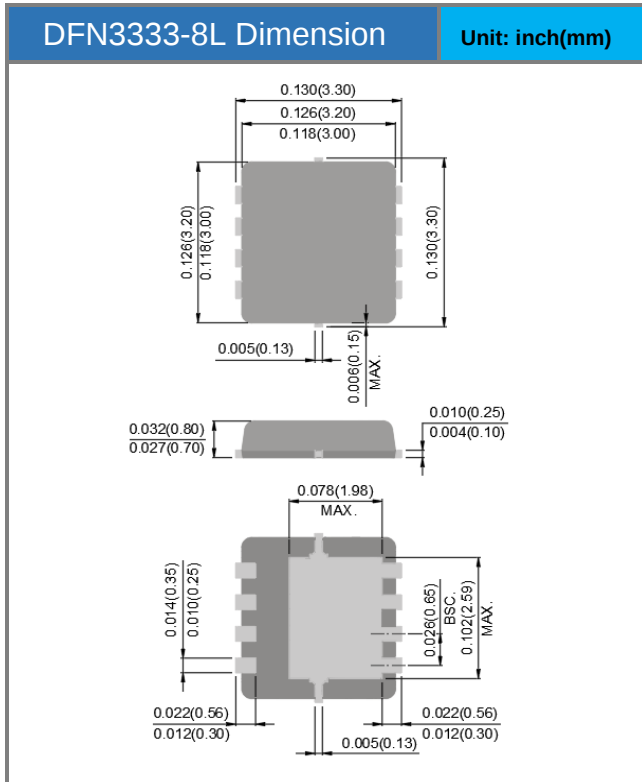
Fig.12 Normalized Transient Thermal Impedance

PJQ4518S6CP-AU

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJQ4518S6CP-AU	DFN3333-8L	5K pcs / 13" reel	518K

Packaging Information & Mounting Pad Layout



PJQ4518S6CP-AU

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.