



# PJQ2460

## 60V N-Channel Enhancement Mode MOSFET

<b>Voltage</b>	<b>60 V</b>	<b>Current</b>	<b>3.2A</b>
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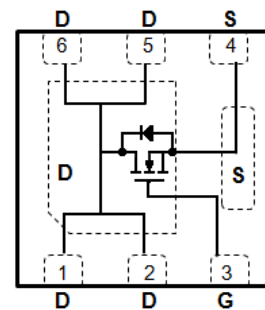
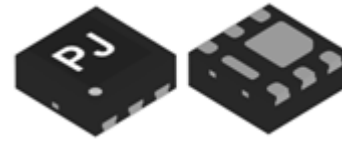
### Features

- $R_{DS(ON)}$  ,  $V_{GS}@10V$ ,  $I_D@3.2A < 75m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$ ,  $I_D@2.0A < 90m\Omega$
- Advanced Trench Process Technology
- High density cell design for ultra low on-resistance
- Lead free in compliance with EU RoHS2.0 (2011/65/EU & 2015/865/EU directive)
- Green molding compound as per IEC61249 Std.. (Halogen Free)

### Mechanical Data

- Case: DFN2020B-6L Package
- Terminals: Solderable per MIL-STD-750, Method 2026

DFN2020B-6L



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current		$I_D$	3.2	A
Pulsed Drain Current		$I_{DM}$	12.8	A
Power Dissipation	$T_a=25^\circ C$	$P_D$	2.0	W
	Derate above $25^\circ C$		16	mW/ $^\circ C$
Operating Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~150	$^\circ C$
Typical Thermal Resistance		$R_{\theta JA}$	62.5	$^\circ C/W$
- Junction to Ambient, $t < 10s$ (Note 3)				



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## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.8	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.2A$	-	53	75	m $\Omega$
		$V_{GS}=4.5V, I_D=2.0A$	-	61	90	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>Dynamic</b> (Note 6)						
Total Gate Charge	$Q_g$	$V_{DS}=48V, I_D=3.0A,$ $V_{GS}=10V$ (Note 1,2)	-	9.3	-	nC
Gate-Source Charge	$Q_{gs}$		-	2.2	-	
Gate-Drain Charge	$Q_{gd}$		-	1.9	-	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	509	-	pF
Output Capacitance	$C_{oss}$		-	47	-	
Reverse Transfer Capacitance	$C_{rss}$		-	23	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=3.0A,$ $V_{GS}=10V,$ $R_G=3.3\Omega$ (Note 1,2)	-	3.2	-	ns
Turn-On Rise Time	$t_r$		-	9.7	-	
Turn-Off Delay Time	$t_{d(off)}$		-	18.5	-	
Turn-Off Fall Time	$t_f$		-	6.4	-	
<b>Drain-Source Diode</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$	---	-	-	3.2	A
Diode Forward Voltage	$V_{SD}$	$I_S=1A, V_{GS}=0V$	-	0.75	1.2	V

NOTES :

1. Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature  $T_J(\text{MAX})=150^\circ\text{C}$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^\circ\text{C}$ .
5.  $R_{\theta JA}$  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 inch<sup>2</sup> with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.



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## TYPICAL CHARACTERISTIC CURVES

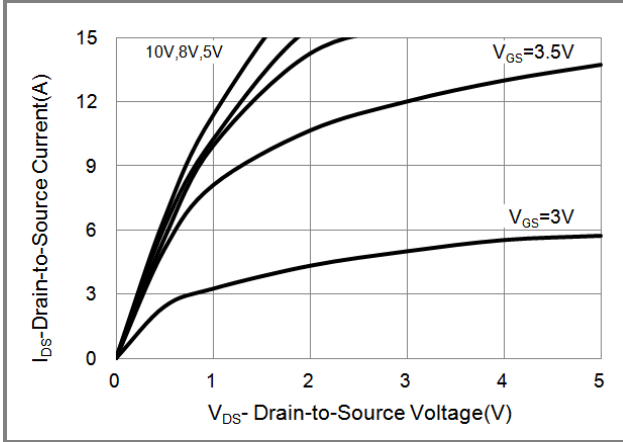


Fig.1 On-Region Characteristics

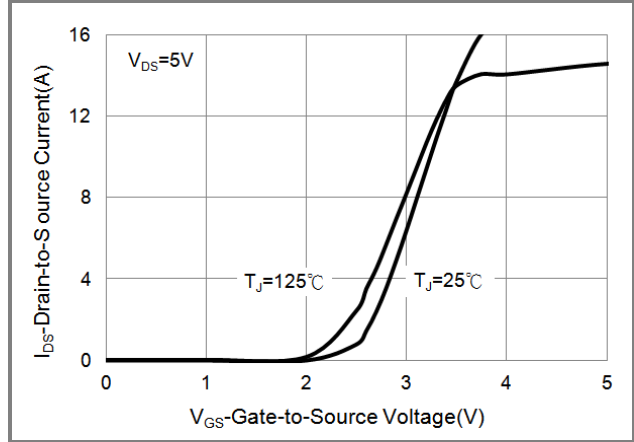


Fig.2 Transfer Characteristics

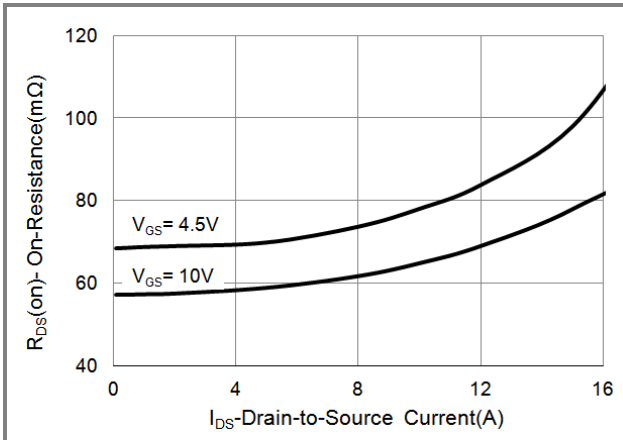


Fig.3 On-Resistance vs. Drain Current

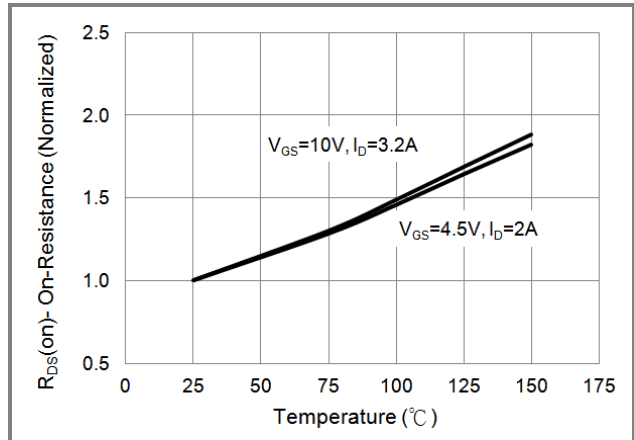


Fig.4 On-Resistance vs. Junction temperature

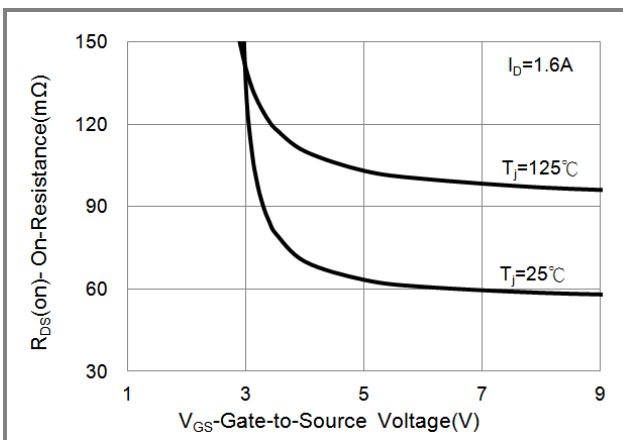


Fig.5 On-Resistance Variation with VGS.

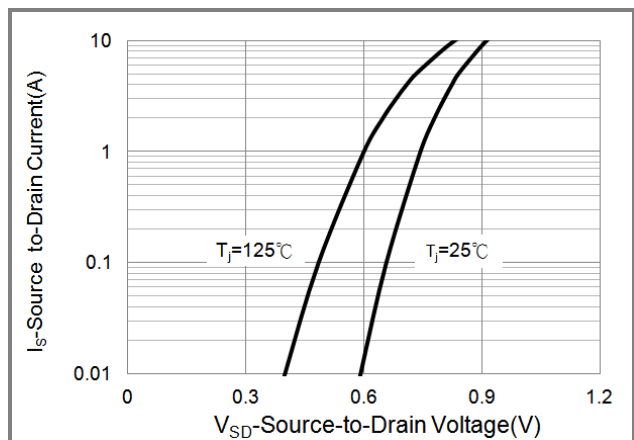


Fig.6 Body Diode Characteristics



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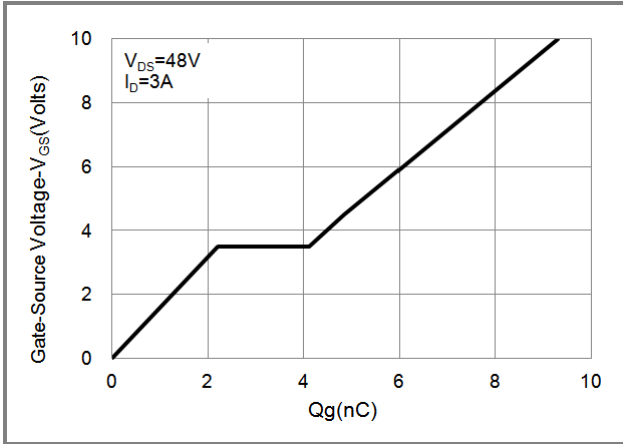


Fig.7 Gate-Charge Characteristics

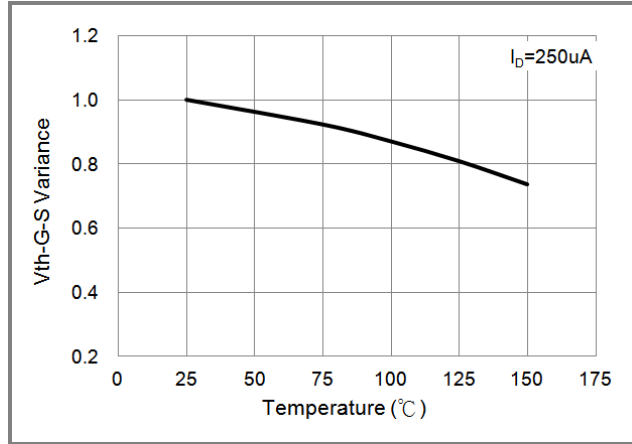


Fig.8 Threshold Voltage Variation with Temperature.

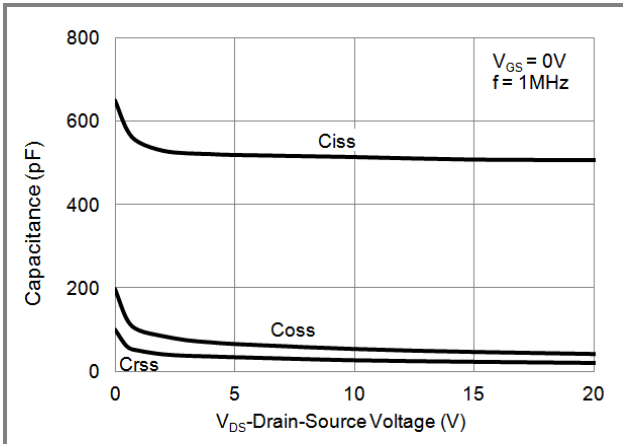


Fig.9 Capacitance vs. Drain-Source Voltage.





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