

30V N-Channel Enhancement Mode MOSFET

Voltage

30 V

Current

80A

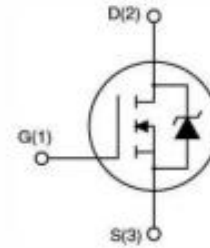
Features

- $R_{DS(ON)}, V_{GS}@10V, I_D@20A < 5.1m\Omega$
- $R_{DS(ON)}, V_{GS}@4.5V, I_D@10A < 11m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance

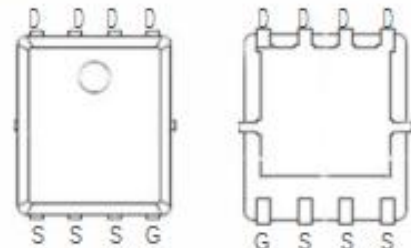
Mechanical Data

- Case: DFN5060-8L Package

DFN5060-8L



Package



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	+20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	80	A
	$T_C=100^\circ\text{C}$		50	
Pulsed Drain Current ^(Note 1)		I_{DM}	320	
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	62	W
	$T_C=100^\circ\text{C}$		25	
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	15	A
	$T_A=70^\circ\text{C}$		12	A
Power Dissipation		P_D	2.0	W
Power Dissipation			$T_A=70^\circ\text{C}$	
Single Pulse Avalanche Energy ^(Note 6)		E_{AS}	80	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance ^(Note 4,5)	Junction to Case	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	62.5	

- Limited only By Maximum Junction Temperature

Electrical Characteristics (T =25 C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	4.2	5.1	mΩ
		$V_{GS}=4.5V, I_D=10A$	-	7.1	11	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} =30V, V_{GS}=0V$	-	-	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Dynamic (Note 7)						
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=20A,$ $V_{GS}=4.5V$ (Note 2,3)	-	12	-	nC
Gate-Source Charge	Q_{gs}		-	3.8	-	
Gate-Drain Charge	Q_{gd}		-	4.3	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$	-	1323	-	pF
Output Capacitance	C_{oss}		-	219	-	
Reverse Transfer Capacitance	C_{rss}		-	136	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} =15V, R_L=1\Omega,$ $V_{GS}=10V, R_G=3.3\Omega$ (Note 2,3)	-	5.0	-	ns
Turn-On Rise Time	t_r		-	42	-	
Turn-Off Delay Time	$t_{d(off)}$		-	36	-	
Turn-Off Fall Time	t_f		-	5.5	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	80	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.83	1.0	V

NOTES :

- Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- Essentially independent of operating temperature typical characteristics
- Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J = 25^\circ C$.
- The maximum current rating is package limited
- $R_{\theta JA}$ 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 inch² with 2oz.square pad of copper.
- The test condition is L=0.1mH, $I_{AS}=40A, V_{DD}=25V, V_{GS}=10V$
- Guaranteed by design, not subject to production testing

TYPICAL CHARACTERISTIC CURVES

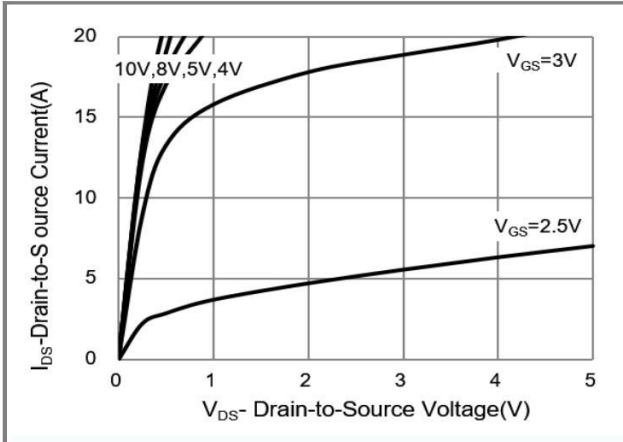


Fig.1 On-Region Characteristics

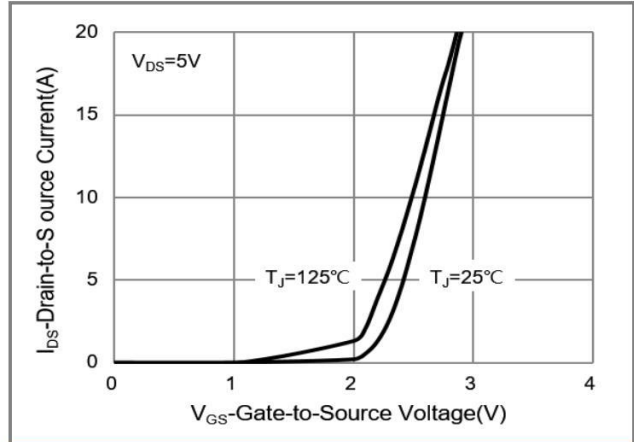


Fig.2 Transfer Characteristics

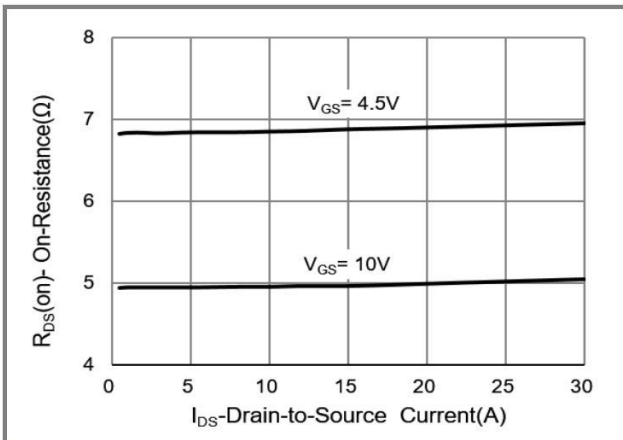


Fig.3 On-Resistance vs. Drain Current

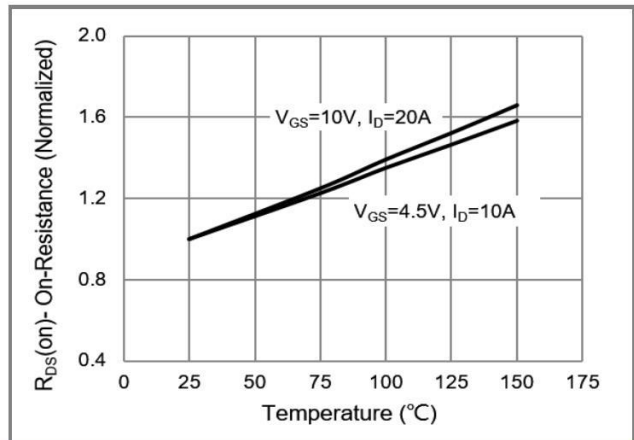


Fig.4 On-Resistance vs. Junction temperature

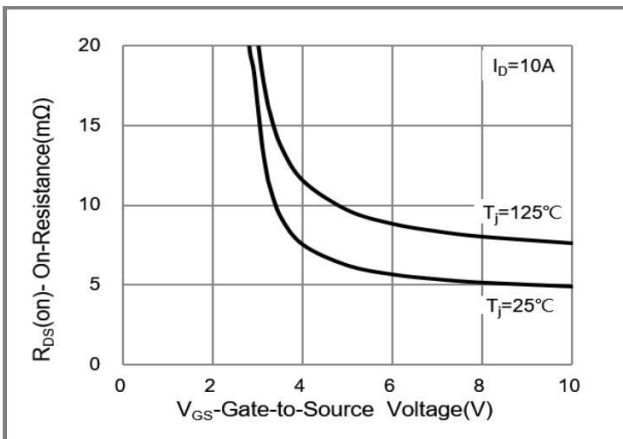


Fig.5 On-Resistance Variation with VGS.

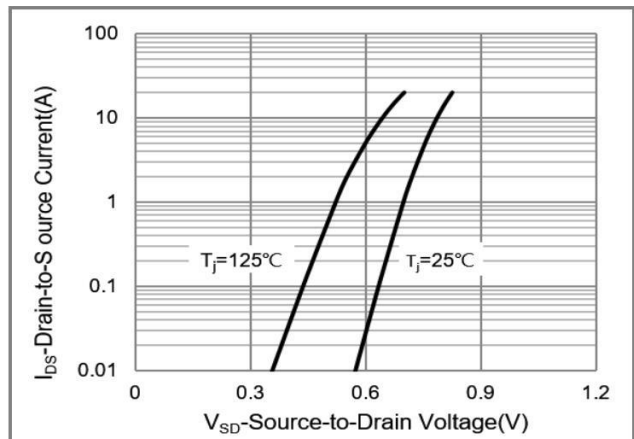


Fig.6 Body Diode Characteristics

TYPICAL CHARACTERISTIC CURVES

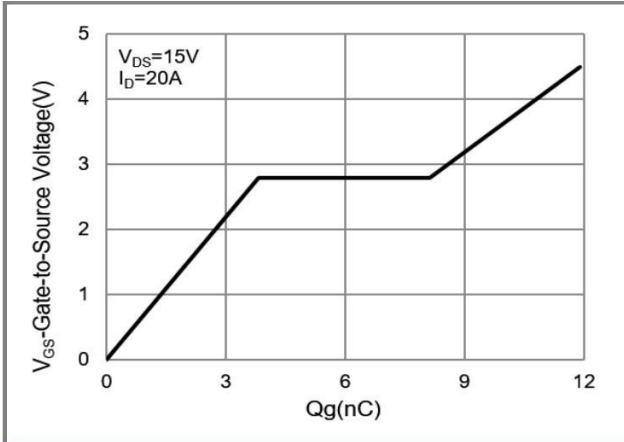


Fig.7 Gate-Charge Characteristics

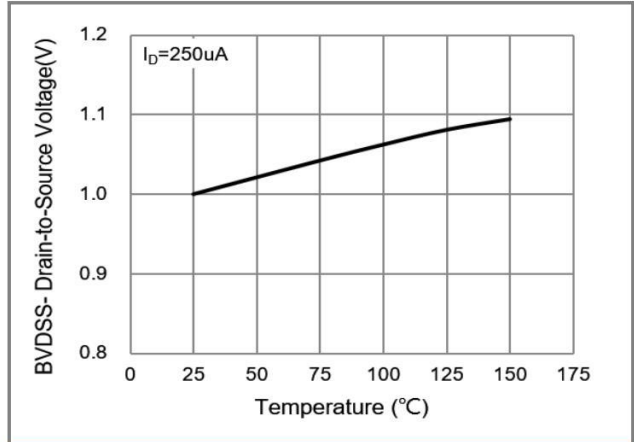


Fig.8 Breakdown Voltage Variation vs. Temperature

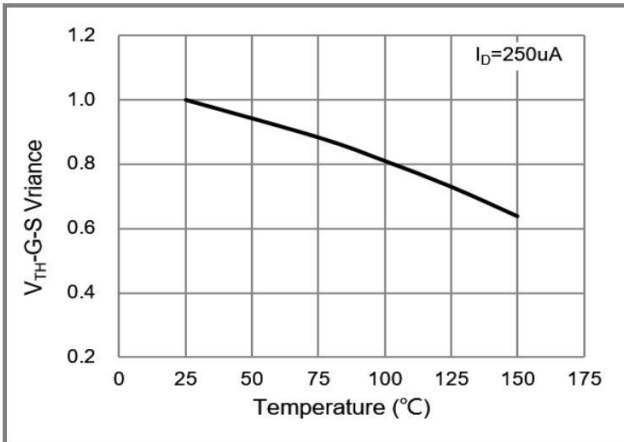


Fig.9 Threshold Voltage Variation with Temperature.

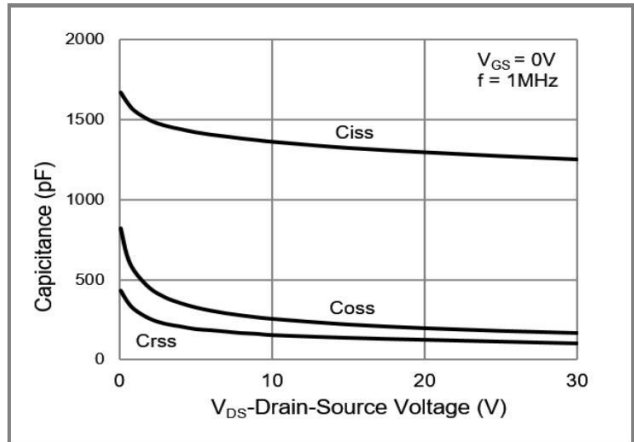


Fig.10 Capacitance vs. Drain-Source Voltage.

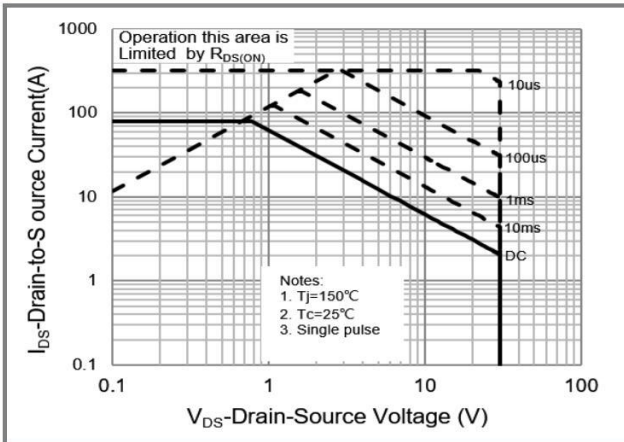


Fig.11 Maximum Safe Operating Area

TYPICAL CHARACTERISTIC CURVES

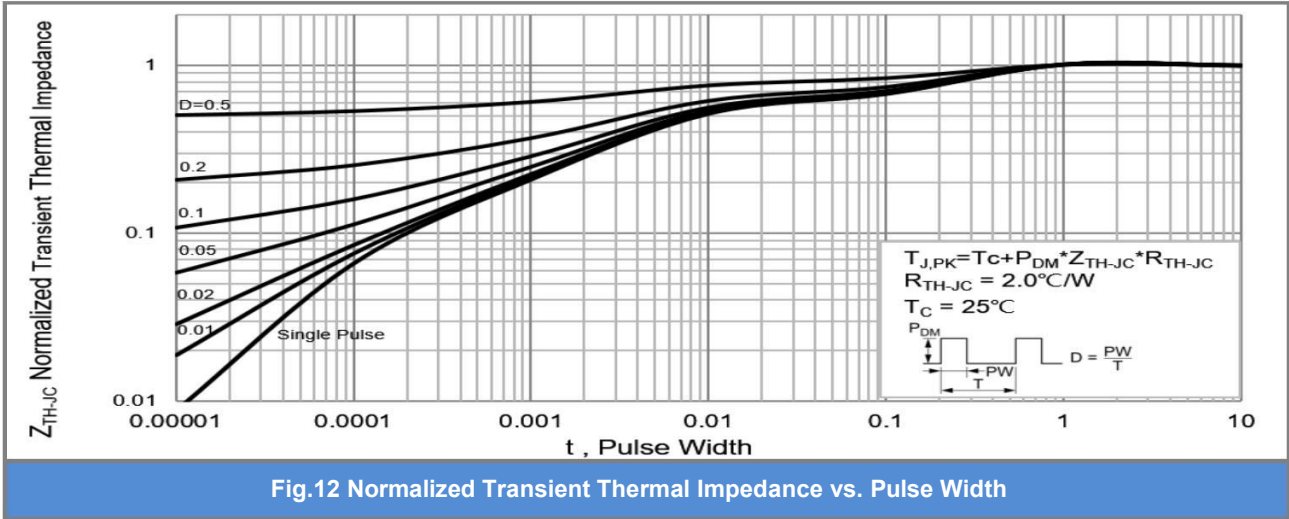
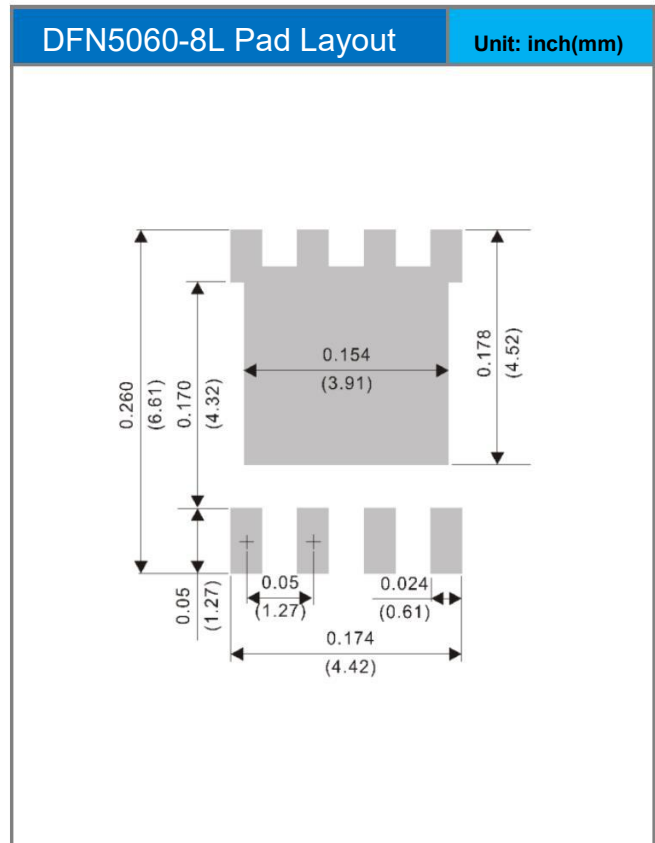
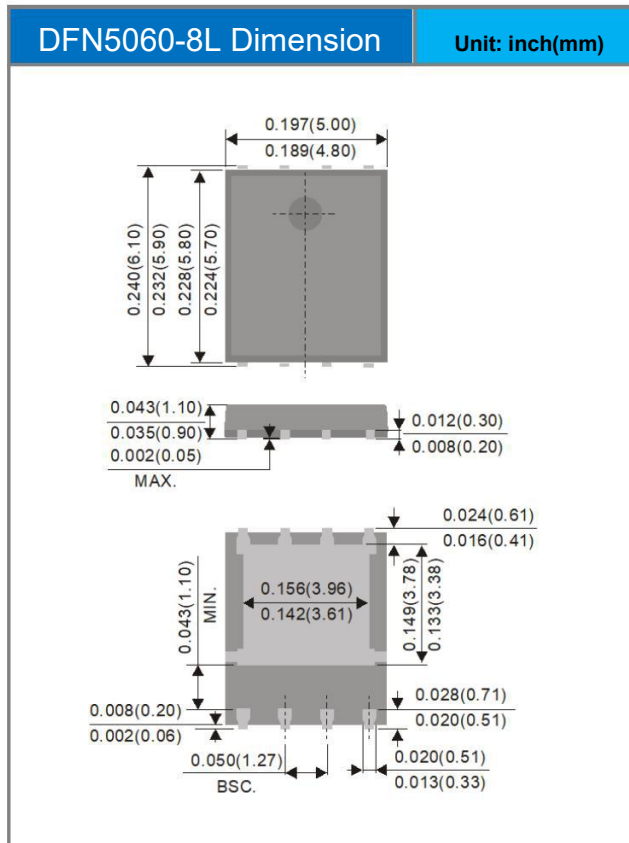


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type
CSM320N80D5*6	DFN5060-8L	3000pcs / 13" reel

Packaging Information & Mounting Pad Layout



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