



STF8220

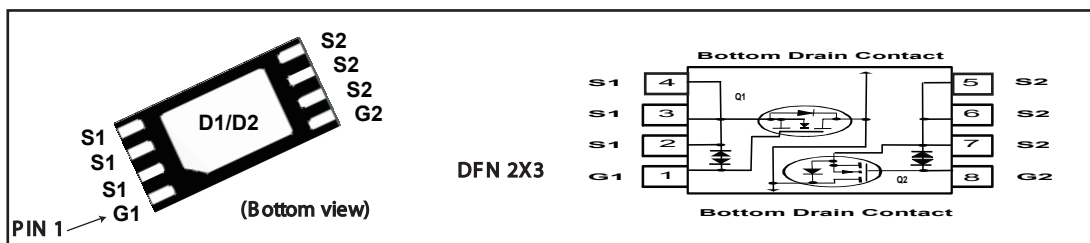
Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (m Ω) Max
20V	7A	20 @ V _{GS} = 4.0V 28 @ V _{GS} = 2.5V

FEATURES

- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



ABSOLUTE MAXIMUM RATINGS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±12	V
Drain Current-Continuous @ T _J =25 °C -Pulsed ^b	I _D	7	A
	I _{DM}	30	A
Drain-Source Diode Forward Current ^a	I _S	1.7	A
Maximum Power Dissipation ^a	P _D	1.56	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R θ JA	80	°C/W
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ELECTRICAL CHARACTERISTICS (TA=25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} = ±12V, V _{DS} =0V			±10	uA
ON CHARACTERISTICS ^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250uA	0.5	0.8	1.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.0V, I _D = 7A		17.5	20	m ohm
		V _{GS} =2.5V, I _D =4A		21	28	m ohm
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D =4A		12		S
DYNAMIC CHARACTERISTICS ^c						
Input Capacitance	C _{ISS}	V _{DS} =10V, V _{GS} = 0V f =1.0MHz		670		pF
Output Capacitance	C _{OSS}			188		pF
Reverse Transfer Capacitance	C _{RSS}			140		pF
SWITCHING CHARACTERISTICS ^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 10V, I _D = 1A, V _{GEN} = 4.0V, R _{GEN} = 6 ohm		15		ns
Rise Time	t _r			32		ns
Turn-Off Delay Time	t _{D(OFF)}			50		ns
Fall Time	t _f			30		ns
Total Gate Charge	Q _g	V _{DS} =10V, I _D = 4A, V _{GS} =4.0V		10		nC
Gate-Source Charge	Q _{gs}			1.4		nC
Gate-Drain Charge	Q _{gd}			4.2		nC

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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS ^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 1.7\text{ A}$		0.8	1.2	V

Notes

a. Surface Mounted on FR4 Board, $t \leq 10\text{sec.}$

b.Pulse Test:Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

c. Guaranteed by design, not subject to production testing.

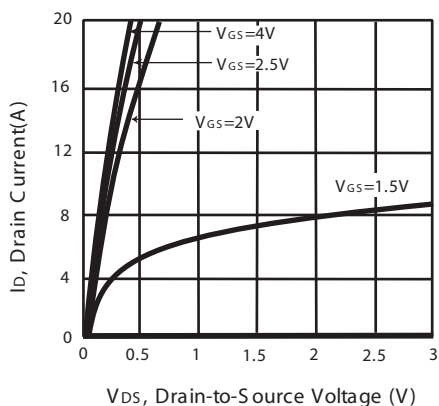


Figure 1. Output Characteristics

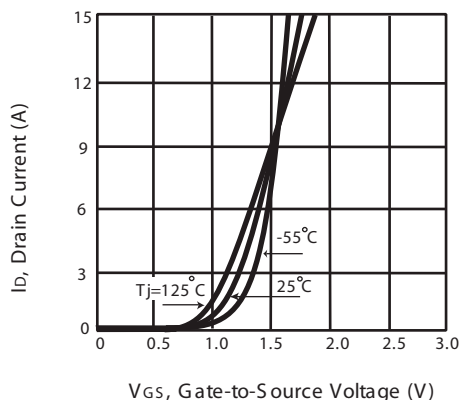


Figure 2. Transfer Characteristics

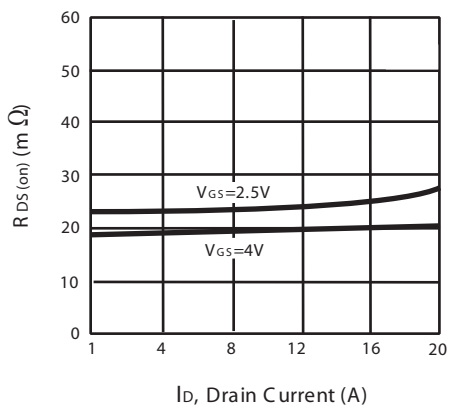


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

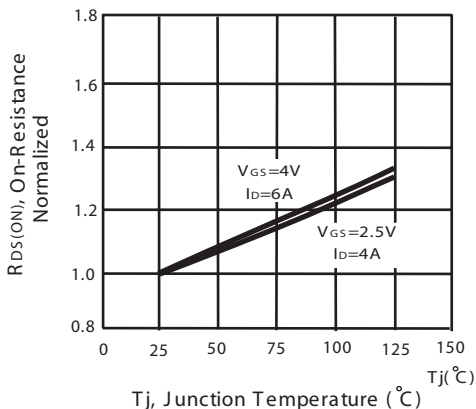


Figure 4. On-Resistance Variation with Drain Current and Temperature

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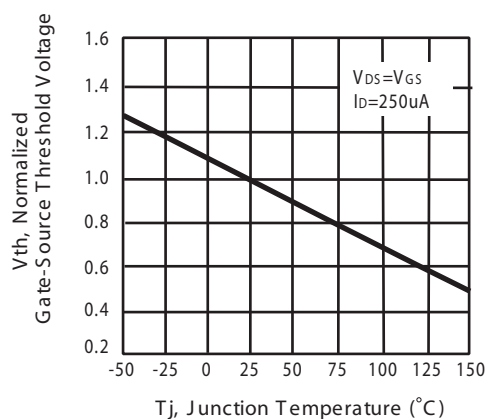


Figure 5. Gate Threshold Variation with Temperature

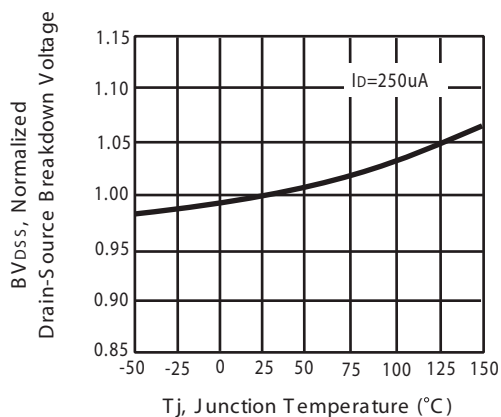


Figure 6. Breakdown Voltage Variation with Temperature

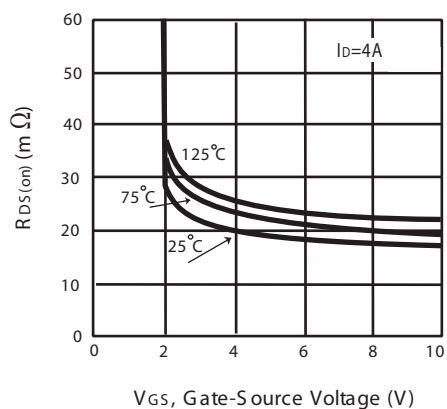


Figure 7. On-Resistance vs. Gate-Source Voltage

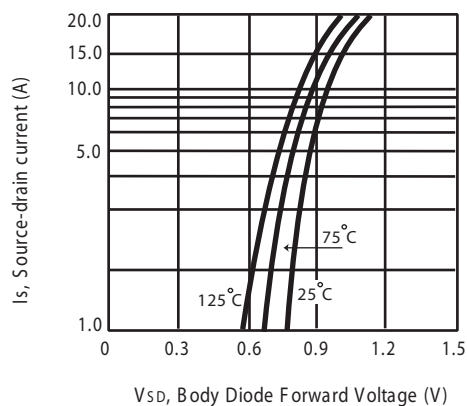


Figure 8. Body Diode Forward Voltage Variation with Source Current

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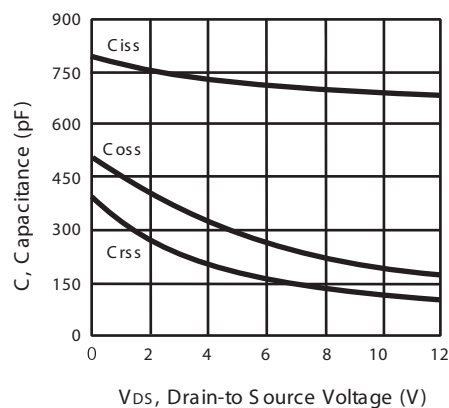


Figure 9. Capacitance

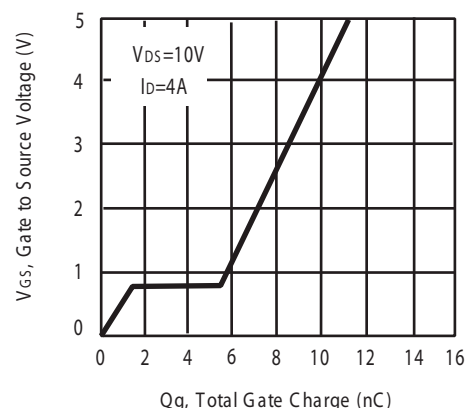


Figure 10. Gate Charge

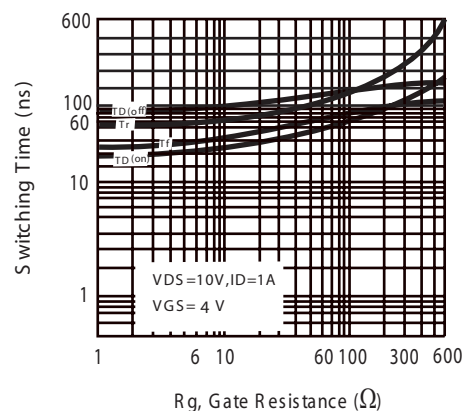


Figure 11. switching characteristics

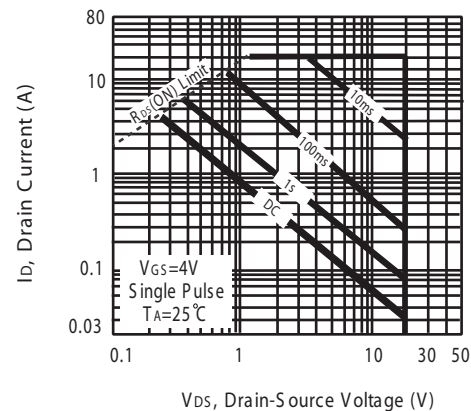


Figure 12. Maximum Safe Operating Area

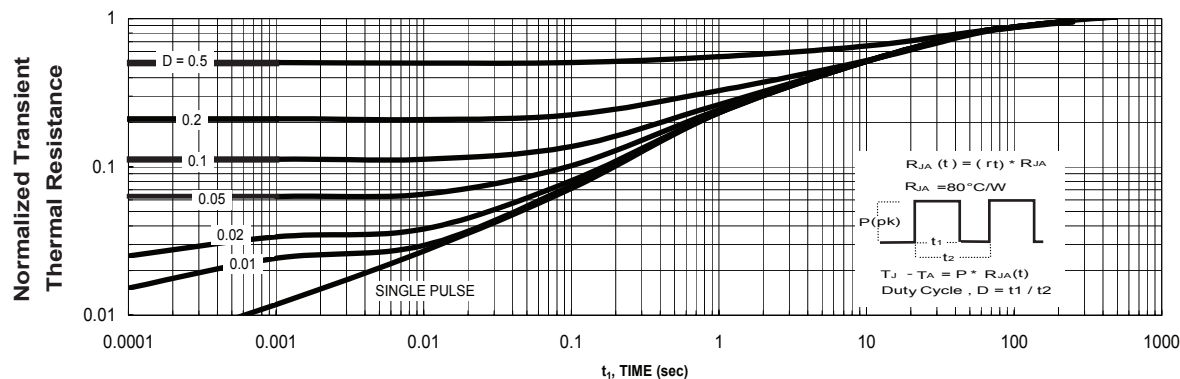
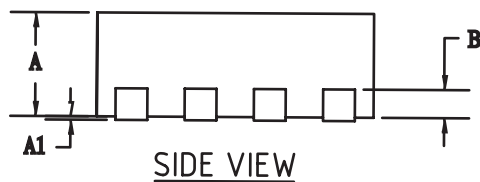
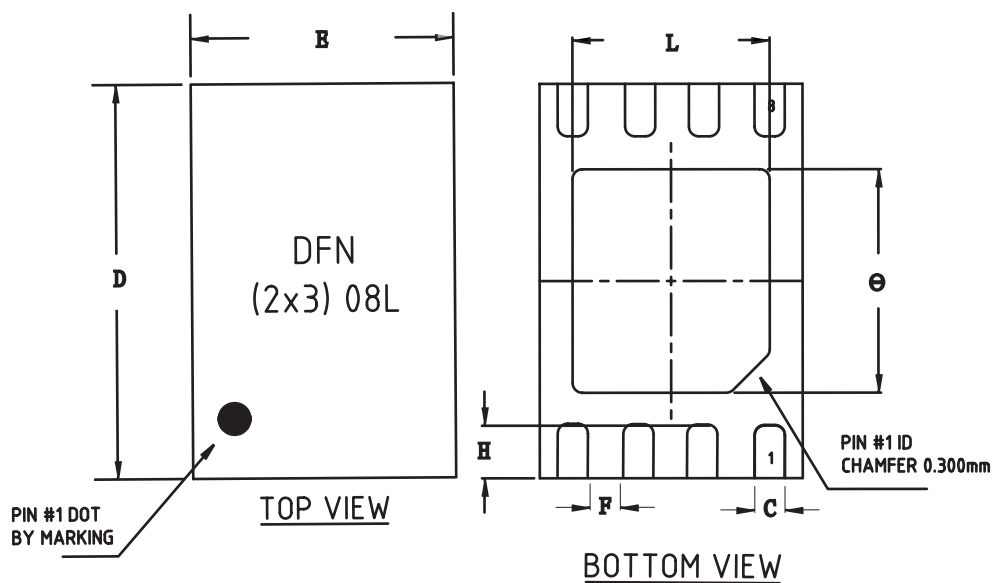


Figure 13. Square Wave Pulse Duration(sec)
Normalized Thermal Transient Impedance Curve

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PACKAGE OUTLINE DIMENSIONS

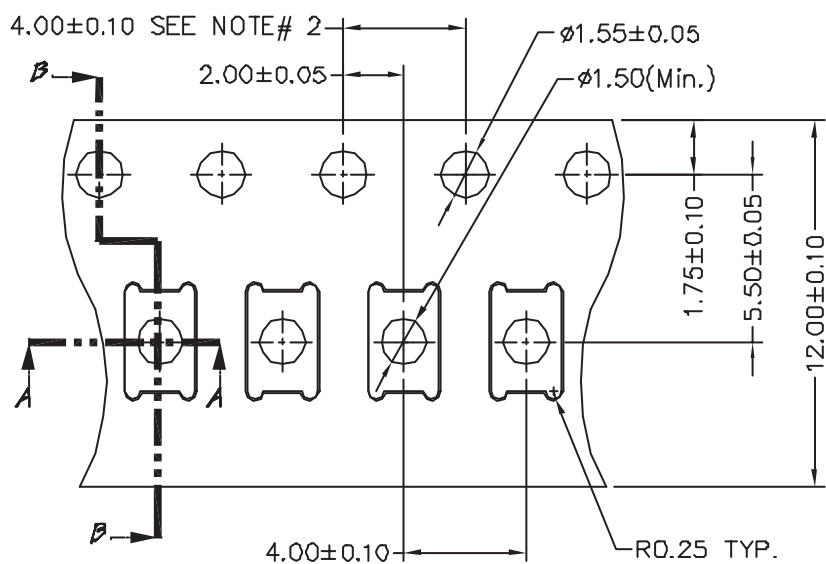
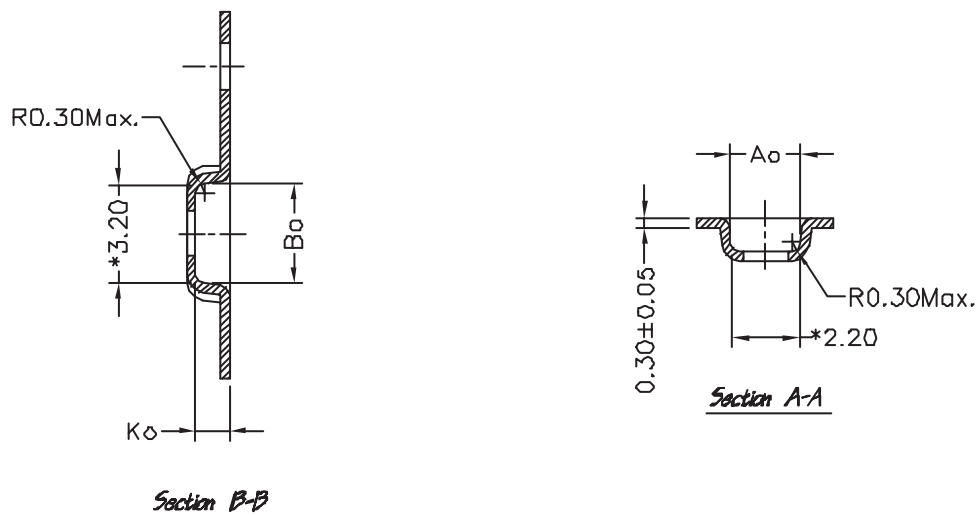
DFN



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.025	0.00	0.001
D	2.95	3.05	0.116	0.120
E	1.95	2.05	0.077	0.081
H	0.30	0.45	0.014	0.018
L	1.45	1.55	0.057	0.061
e	1.65	1.75	0.065	0.069
B	0.195	0.211	0.0076	0.008
C	0.18	0.28	0.007	0.011
F	0.22	0.32	0.008	0.126

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DFN Tape and Reel Data



DIM.	mm
A_0	2.30
B_0	3.30
$K\phi$	1.10