

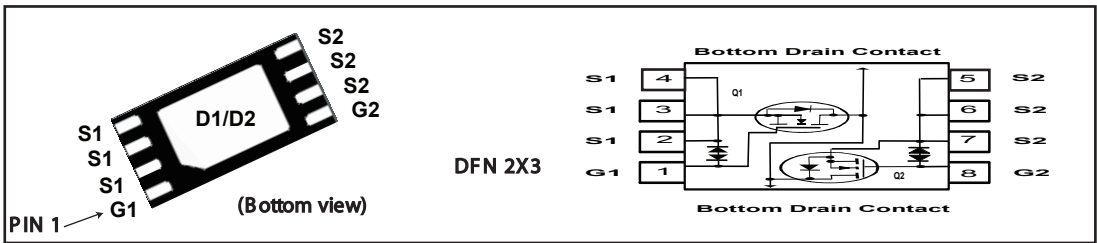


## Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Max
20V	7A	20 @ V <sub>GS</sub> = 4.0V
		28 @ V <sub>GS</sub> = 2.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Surface Mount Package.
- ESD Protected.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25 °C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Drain Current-Continuous @ T <sub>J</sub> =25°C -Pulsed <sup>b</sup>	I <sub>D</sub>	7	A
	I <sub>DM</sub>	30	A
Drain-Source Diode Forward Current <sup>a</sup>	I <sub>S</sub>	1.7	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	1.56	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R <sub>θJA</sub>	80	°C/W
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# STF8220

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1	$\mu A$
Gate-Body Leakage	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 10$	$\mu A$
ON CHARACTERISTICS <sup>b</sup>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	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 <sup>c</sup>						
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 <sup>c</sup>						
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD} = 10V,$ $I_D = 1A,$ $V_{GEN} = 4.0V,$ $R_{GEN} = 6\text{ ohm}$		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

# STF8220

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>DRAIN-SOURCE DIODE CHARACTERISTICS <sup>b</sup></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  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
- c. Guaranteed by design, not subject to production testing.

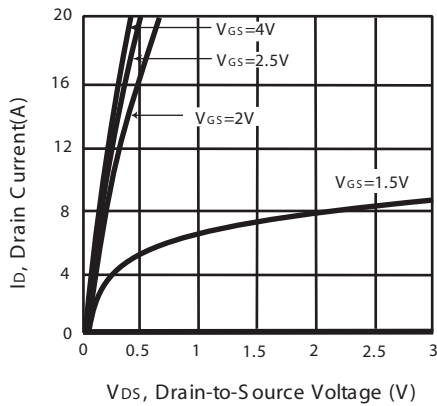


Figure 1. Output Characteristics

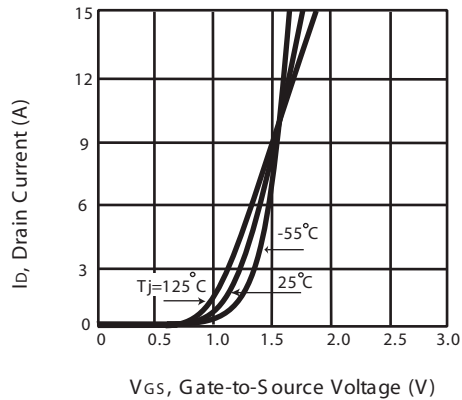


Figure 2. Transfer Characteristics

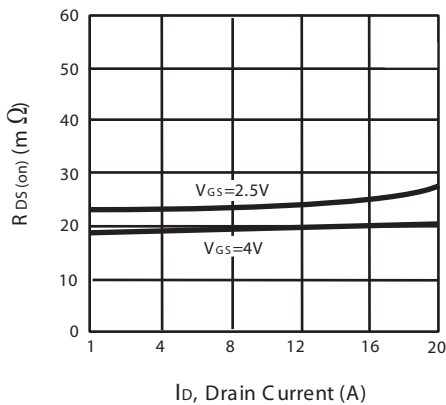


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

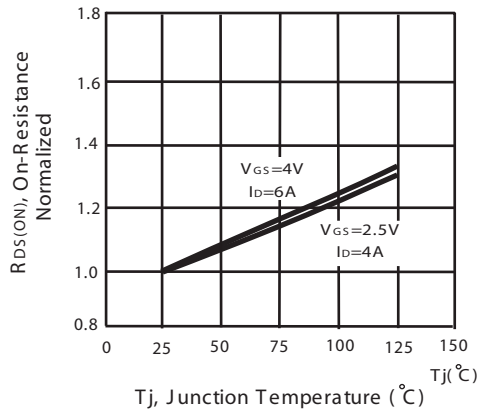


Figure 4. On-Resistance Variation with Drain Current and Temperature

# STF8220

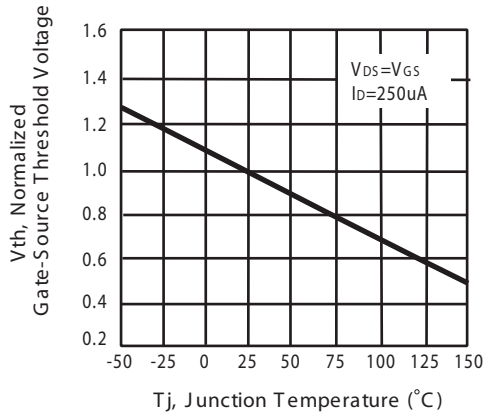


Figure 5. Gate Threshold Variation with Temperature

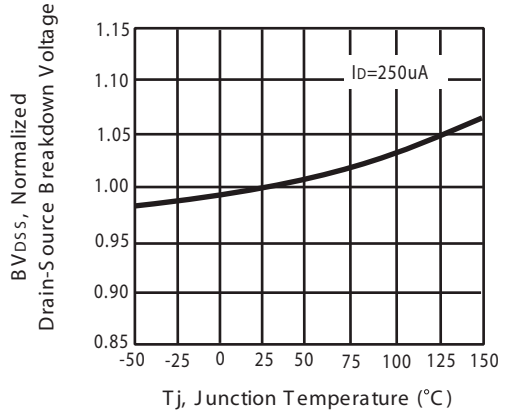


Figure 6. Breakdown Voltage Variation with Temperature

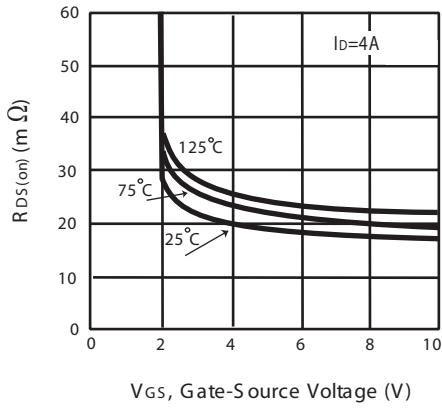


Figure 7. On-Resistance vs. Gate-Source Voltage

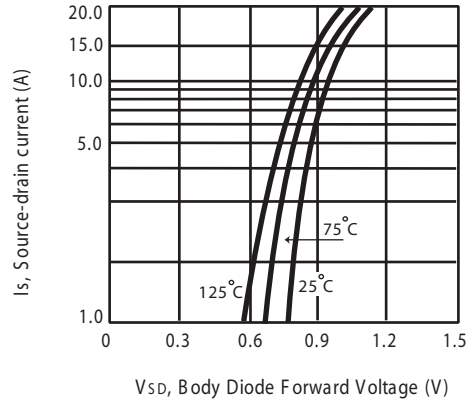


Figure 8. Body Diode Forward Voltage Variation with Source Current

# STF8220

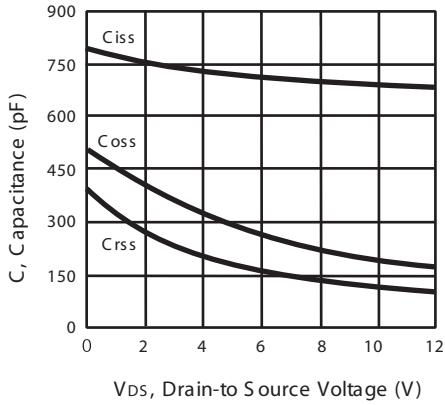


Figure 9. Capacitance

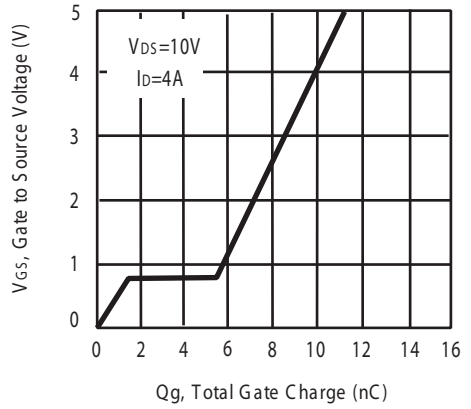


Figure 10. Gate Charge

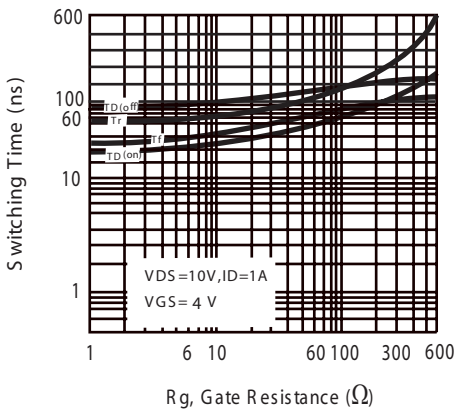


Figure 11. switching characteristics

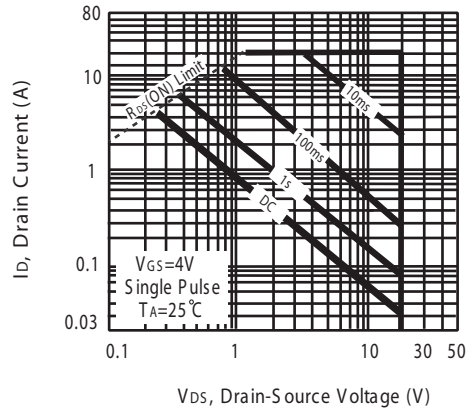


Figure 12. Maximum Safe Operating Area

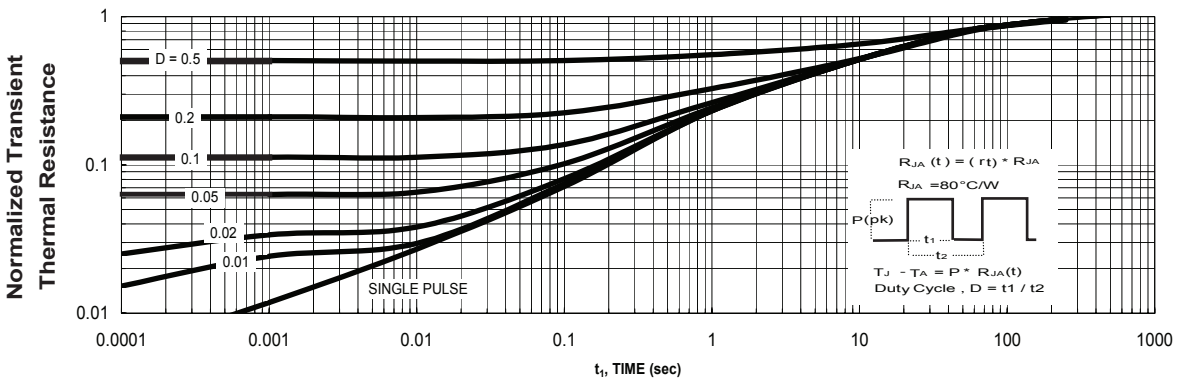
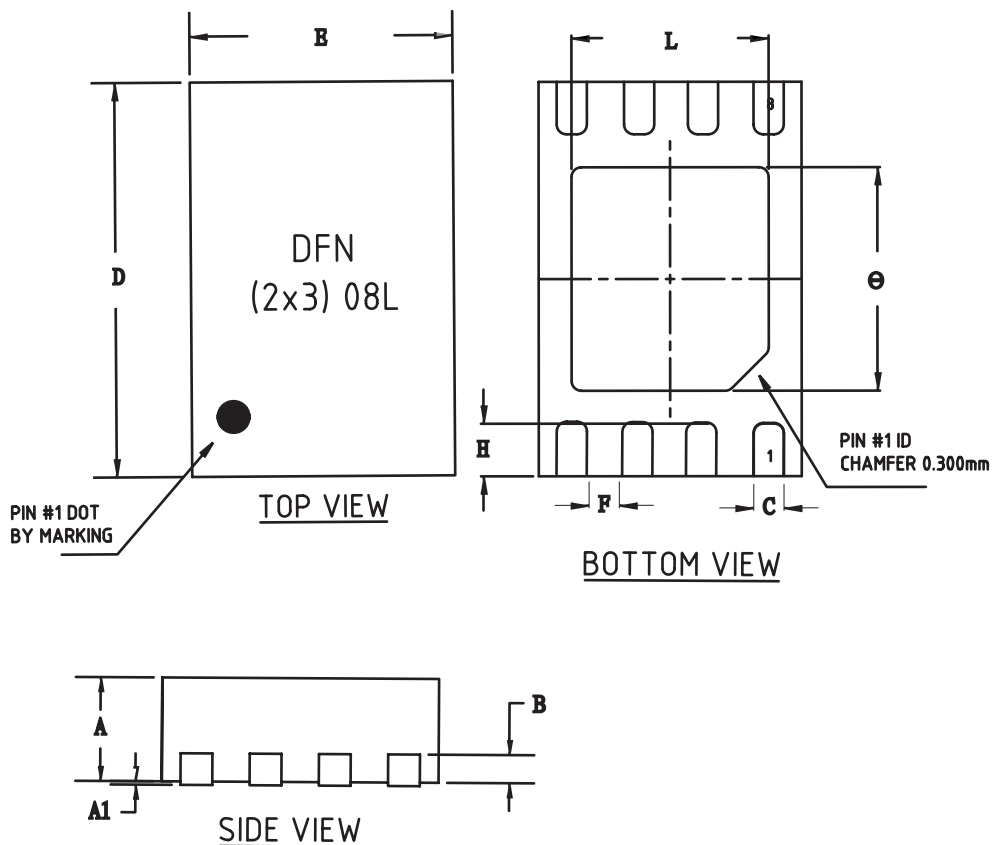


Figure 13. Square Wave Pulse Duration(sec)  
Normalized Thermal Transient Impedance Curve

# STF8220

## PACKAGE OUTLINE DIMENSIONS

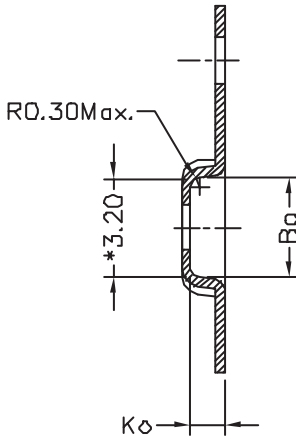
### DFN



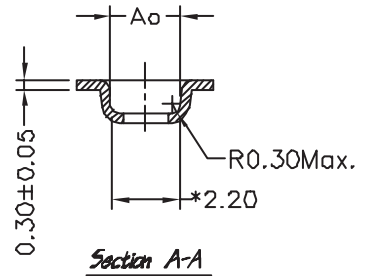
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	<b>0.80</b>	<b>1.00</b>	<b>0.031</b>	<b>0.039</b>
<b>A1</b>	<b>0.00</b>	<b>0.025</b>	<b>0.00</b>	<b>0.001</b>
<b>D</b>	<b>2.95</b>	<b>3.05</b>	<b>0.116</b>	<b>0.120</b>
<b>E</b>	<b>1.95</b>	<b>2.05</b>	<b>0.077</b>	<b>0.081</b>
<b>H</b>	<b>0.30</b>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

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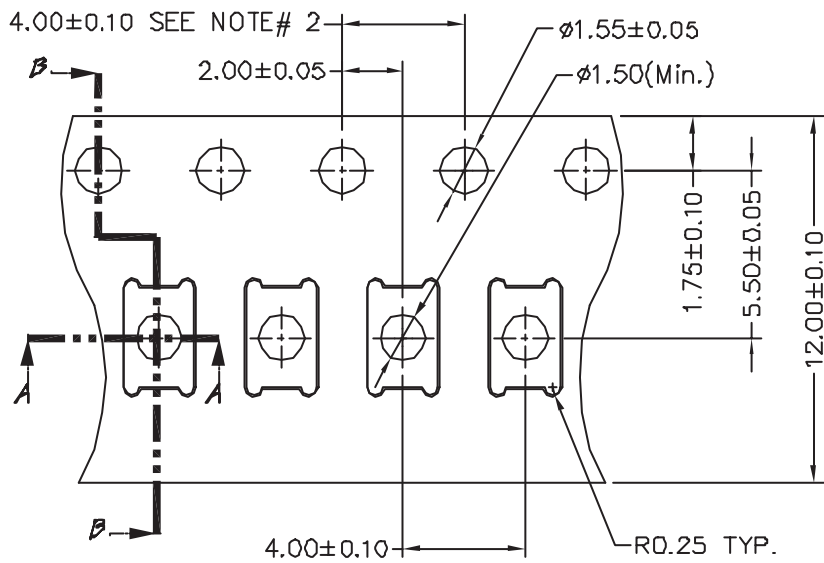
## DFN Tape and Reel Data



Section B-B



Section A-A



DIM.	mm
$A_0$	2.30
$B_0$	3.30
$K_0$	1.10