

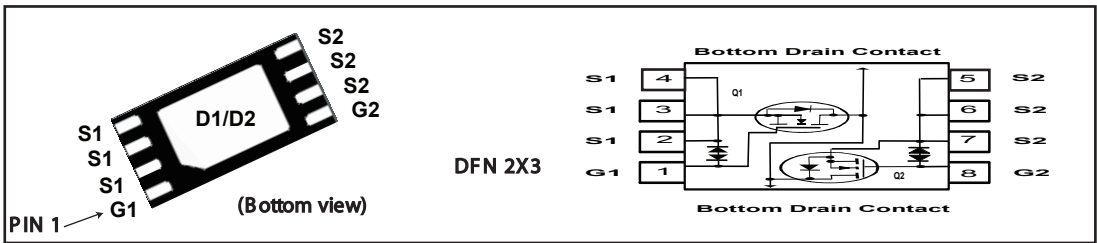


## Dual N-Channel Enhancement Mode Field Effect Transistor

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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## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C unless otherwise noted)

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

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## 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  $\leq 300\text{ us}$ , Duty Cycle  $\leq 2\%$ .
- c. Guaranteed by design, not subject to production testing.

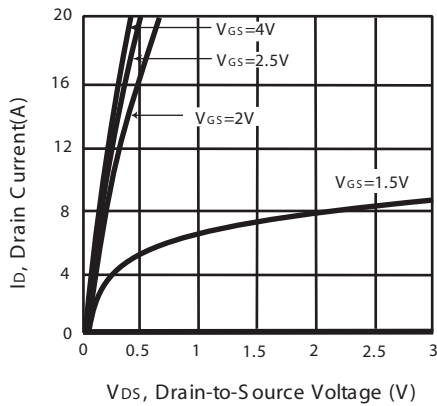


Figure 1. Output Characteristics

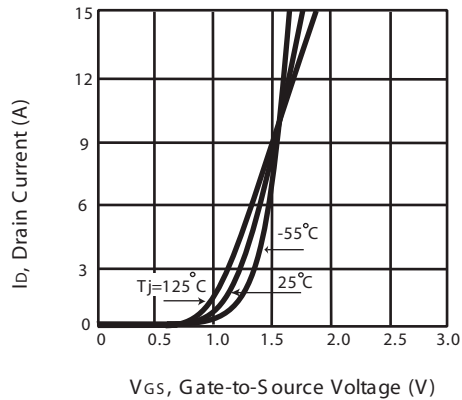


Figure 2. Transfer Characteristics

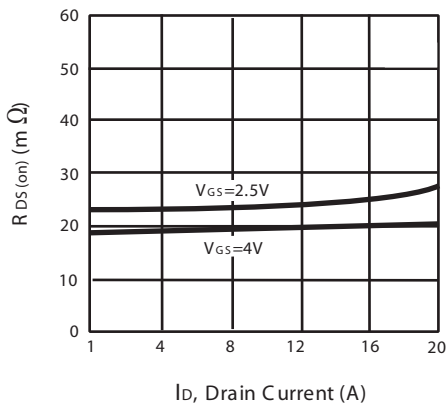


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

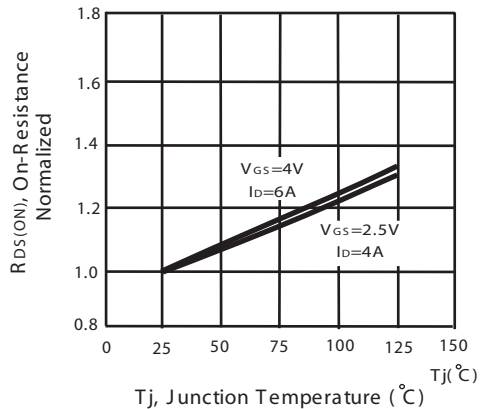


Figure 4. On-Resistance Variation with Drain Current and Temperature

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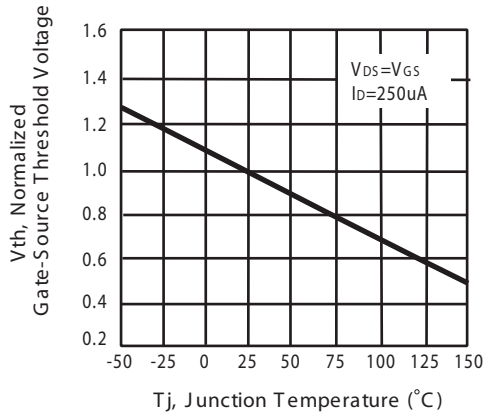


Figure 5. Gate Threshold Variation with Temperature

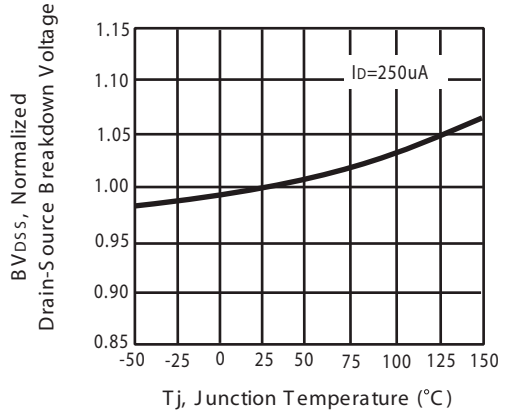


Figure 6. Breakdown Voltage Variation with Temperature

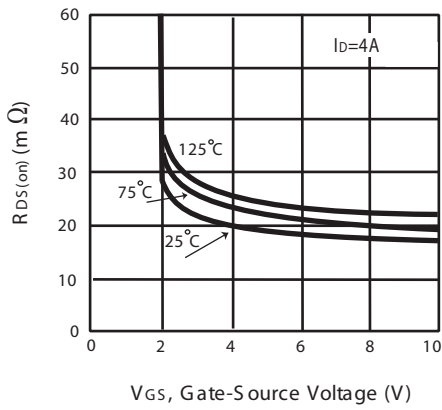


Figure 7. On-Resistance vs. Gate-Source Voltage

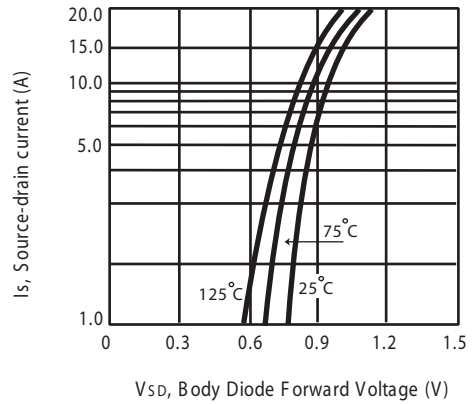


Figure 8. Body Diode Forward Voltage Variation with Source Current

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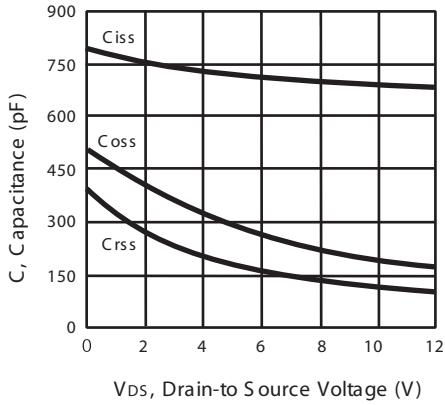


Figure 9. Capacitance

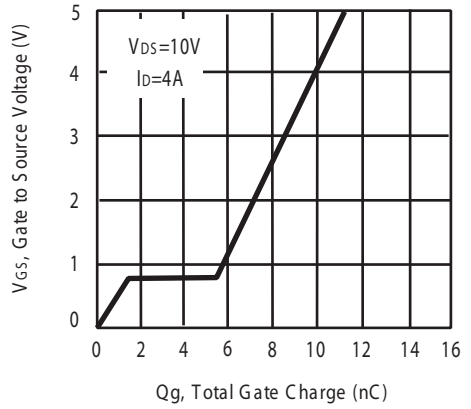


Figure 10. Gate Charge

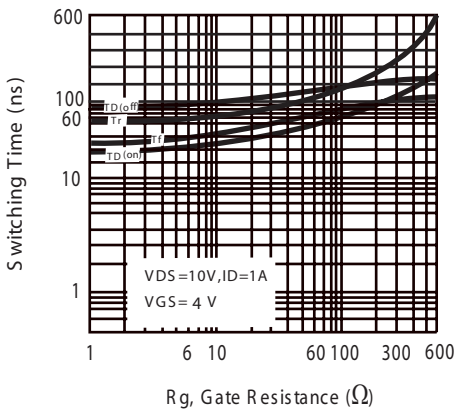


Figure 11. switching characteristics

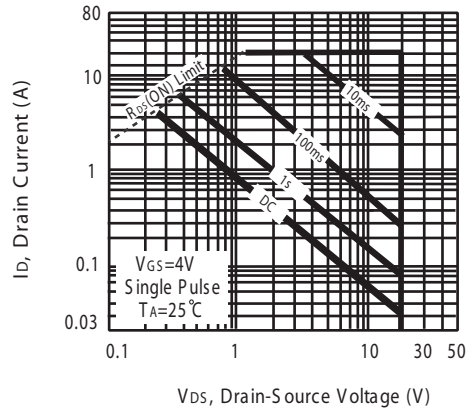


Figure 12. Maximum Safe Operating Area

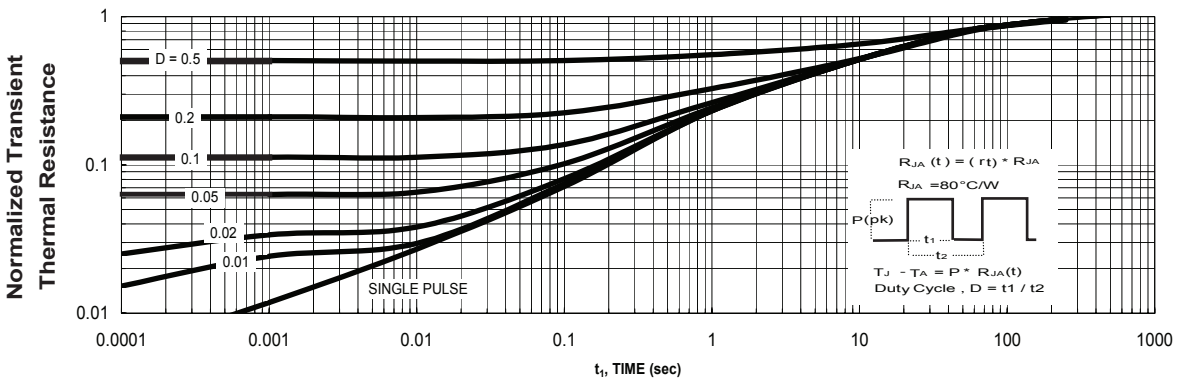
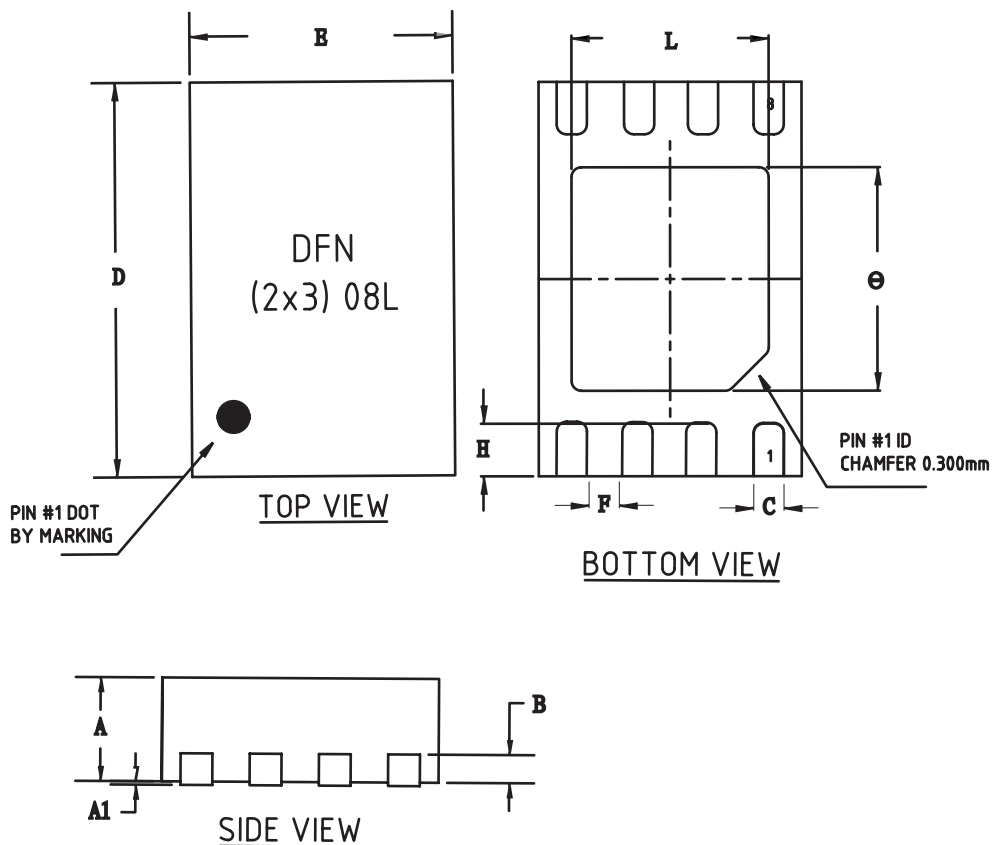


Figure 13. Square Wave Pulse Duration(sec)  
Normalized Thermal Transient Impedance Curve

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## PACKAGE OUTLINE DIMENSIONS

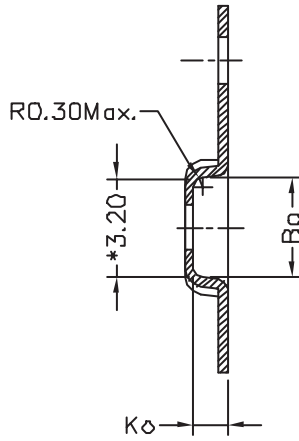
### DFN



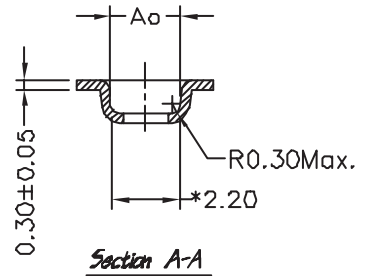
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.025	0.00	0.001
D	2.95	3.05	0.116	0.120
E	1.95	2.05	0.077	0.081
H	0.30	0.45	0.014	0.018
L	1.45	1.55	0.057	0.061
e	1.65	1.75	0.065	0.069
B	0.195	0.211	0.0076	0.008
C	0.18	0.28	0.007	0.011
F	0.22	0.32	0.008	0.126

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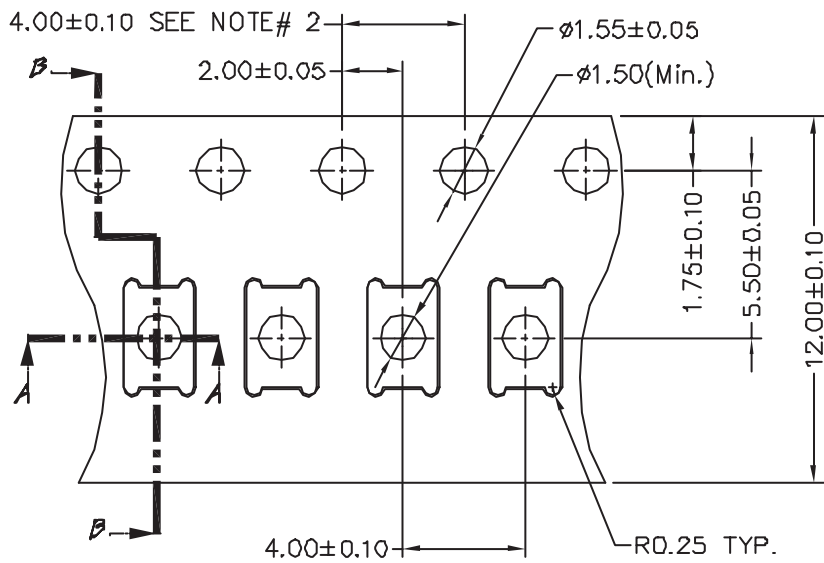
## DFN Tape and Reel Data



Section B-B



Section A-A



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