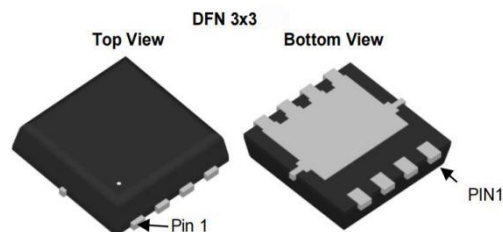




Product Summary

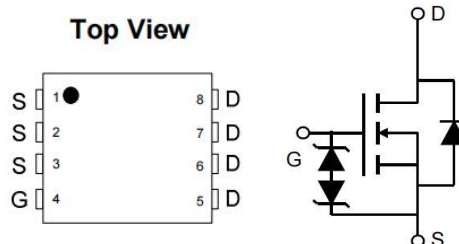
$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max
30V	$<7.5m\Omega @V_{GS}=10V$	48A
	$<11m\Omega @V_{GS}=4.5V$	

Package & Internal Circuit



Description and Applications

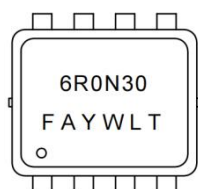
- Trench Power MOS technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability
- RoHS and Halogen-Free Compliant
- DC/DC Converters in Computing
- Isolated DC/DC Converters in Telecom and Industrial



Ordering Information

Part Number	Package Type	Package Qty
CFN6R0N30	DFN3x3	5,000/Tape & Reel

Marking Information



6R0N30--Part Number

F-Fab location

A-Assembly location

Y--Year

W--Week

LT--Lot sequence

Green product

Absolute Maximum Rating ($T_{amb}=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current - Continuous	I_D	48	A
Avalanche Current	I_{AS}	17	A
Single Pulse Avalanche Energy	E_{AS}	28.9	mJ
Power Dissipation	$T_C=25^{\circ}C$	28	W
	$T_C=100^{\circ}C$	5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$		55	$^{\circ}\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$		4.4	$^{\circ}\text{C/W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 30\text{V}$, $V_{GS} = 0\text{V}$			1	μA
		$T_J = 55^{\circ}\text{C}$			5	μA
I_{GSS}	Gate-Body leakage current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 10	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	1.2	1.7	2.2	V
$R_{DS(on)}$	Drain-Source on-Resistance	$V_{GS} = 10\text{V}$, $I_D = 20\text{A}$	5.0	6.0	7.5	m Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 20\text{A}$	7.5	9.2	11	m Ω
g_{FS}	Forward Transconductance	$V_{DS} = 5\text{V}$, $I_D = 20\text{A}$		44		S
V_{SD}	Body Diode Forward Voltage	$I_S = 1\text{A}$, $V_{GS} = 0\text{V}$		0.68	1.0	V
Dynamic parameters						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = 15\text{V}$ $f = 1.0\text{MHz}$		653		pF
C_{oss}	Output Capacitance			242		pF
C_{rss}	Reverse Transfer Capacitance			183		pF
R_g	Gate resistance	$f = 1.0\text{MHz}$		93		Ω
Switching Parameters						
Q_g	Total Gate Charge	$V_{GS} = 10\text{V}$ $V_{DS} = 15\text{V}$ $I_D = 3\text{A}$		15		nC
Q_{gs}	Gate Source Charge			1.5		nC
Q_{gd}	Gate Drain Charge			5		nC
$t_{D(on)}$	Turn-On Delay Time	$V_{GS} = 10\text{V}$ $V_{DS} = 15\text{V}$ $R_L = 0.9\Omega$ $R_G = 3\Omega$		25.6		ns
t_r	Turn-On Rise Time			44.4		ns
$t_{D(off)}$	Turn-Off Delay Time			102.8		ns
t_f	Turn-Off Fall Time			131.2		ns
t_{rr}	Body Diode Reverse Recovery Time	$I_F = 20\text{A}$ $di/dt = 500\text{ A}/\mu\text{s}$		8.7		ns
Q_{rr}	Body Diode Reverse Recovery Charge			13.5		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

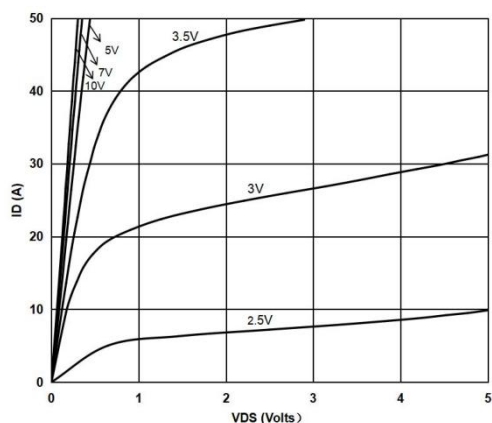


Figure 1: On-Region Characteristics

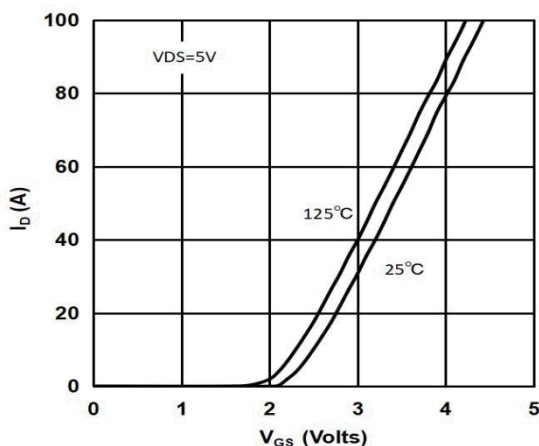


Figure 2: Transfer Characteristics

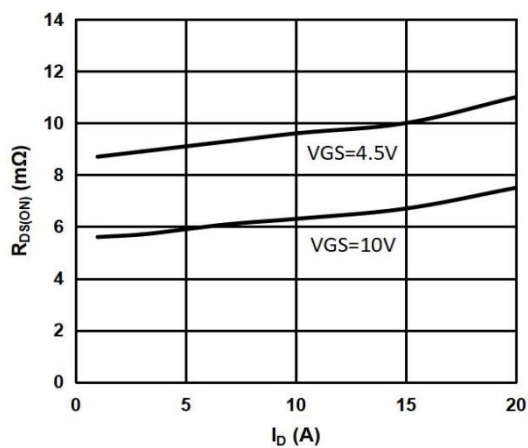


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

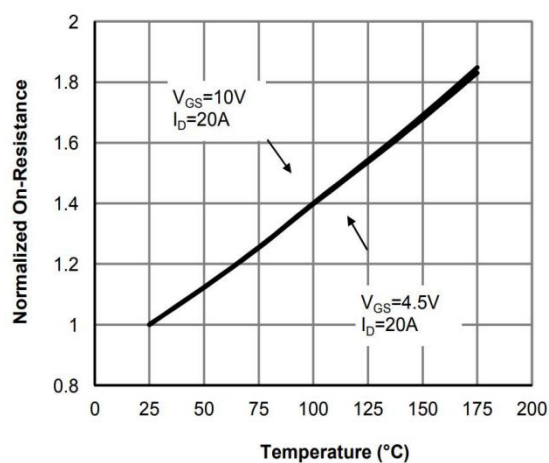


Figure 4: On-Resistance vs. Junction Temperature

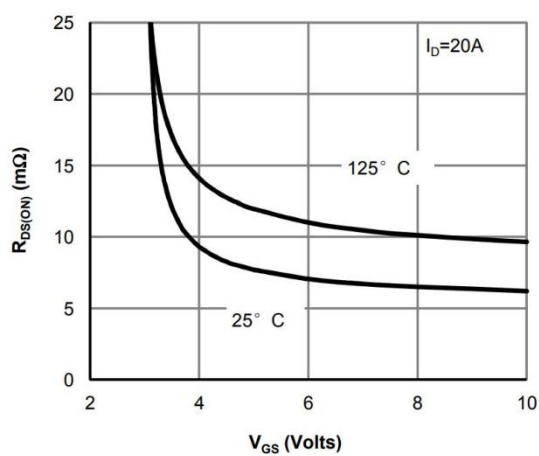


Figure 5: On-Resistance vs. Gate-Source Voltage

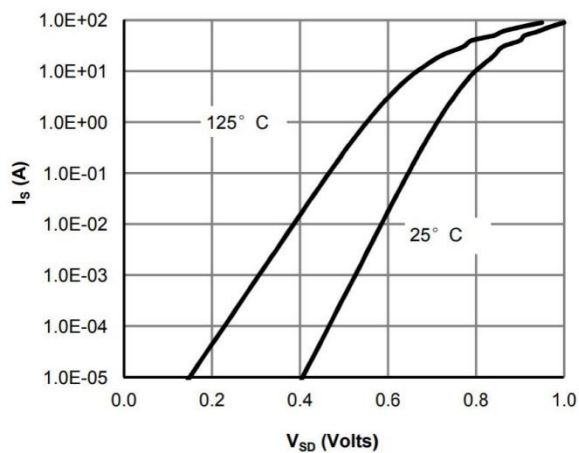


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

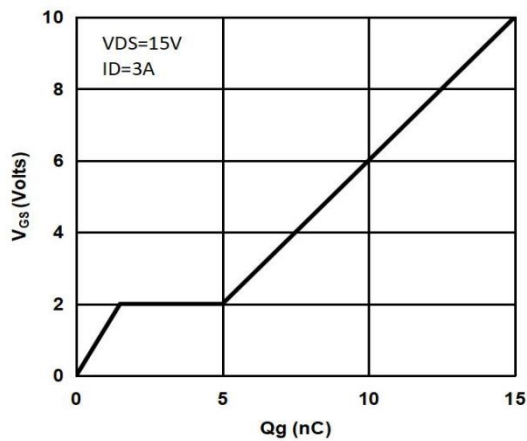


Figure 7: Gate-Charge Characteristics

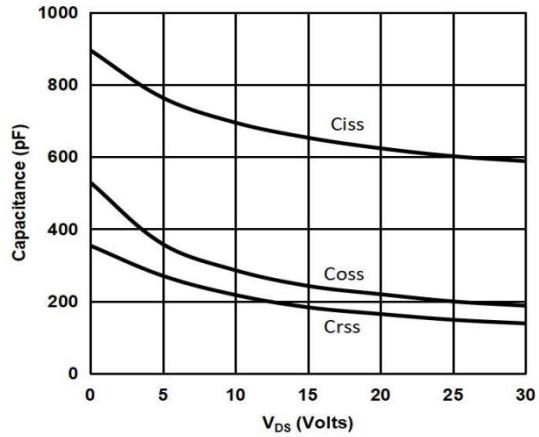


Figure 8: Capacitance Characteristics

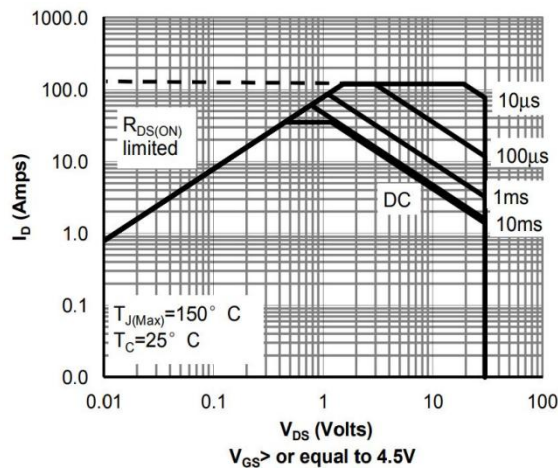


Figure 9: Maximum Forward Biased Safe Operating Area

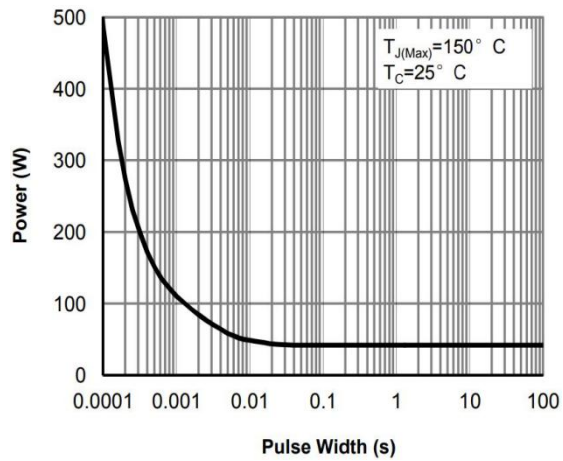


Figure 10: Single Pulse Power Rating Junction-to Case

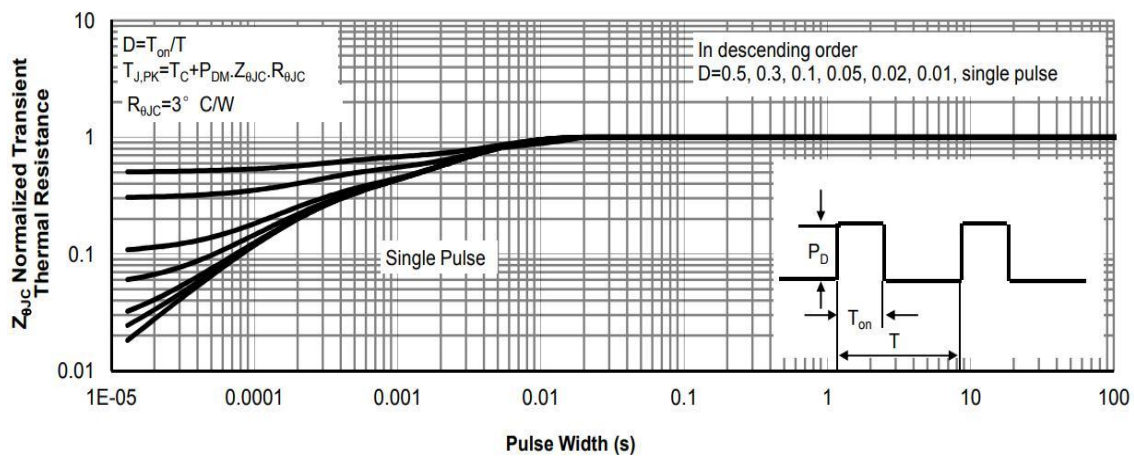
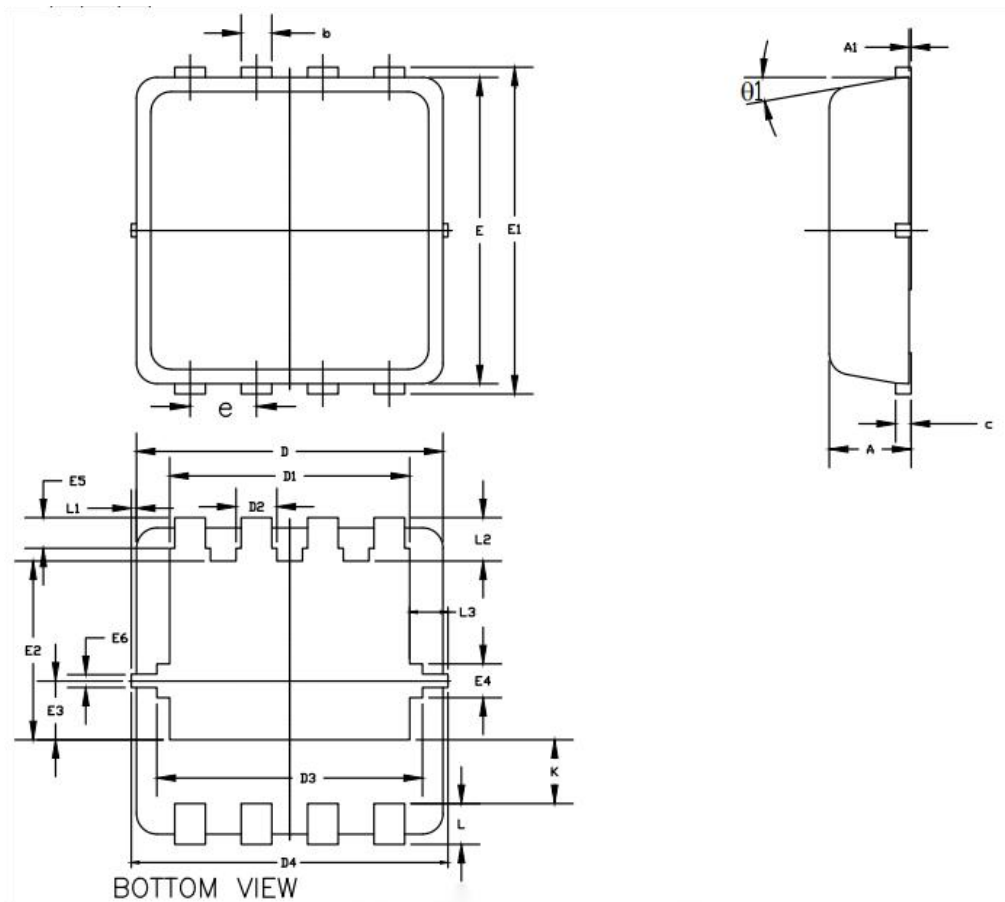


Figure 11: Normalized Maximum Transient Thermal Impedance

DFN3x3 Package



UNIT: mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A1	0.00	0.025	0.05	0.000	0.001	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.25	2.35	2.45	0.089	0.093	0.097
D2	0.30	0.40	0.50	0.012	0.016	0.020
D3	2.50	2.60	2.70	0.098	0.102	0.106
D4	3.00	3.10	3.20	0.118	0.122	0.126
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	3.10	3.20	3.30	0.122	0.126	0.130
E2	1.65	1.75	1.85	0.065	0.069	0.073
E3	0.48	0.58	0.68	0.019	0.023	0.027
E4	0.23	0.33	0.43	0.009	0.013	0.017
E5	0.20	0.30	0.40	0.008	0.012	0.016
E6	0.075	0.125	0.175	0.003	0.005	0.007
e	0.60	0.65	0.70	0.024	0.026	0.028
K	0.52	0.62	0.72	0.020	0.024	0.028
L	0.30	0.40	0.50	0.012	0.016	0.020
L1	0	0.05	0.10	0	0.002	0.004
L2	0.33	0.43	0.53	0.013	0.017	0.021
L3	0.275	0.375	0.475	0.011	0.015	0.019
θ1	0°	10°	12°	0°	10°	12°

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