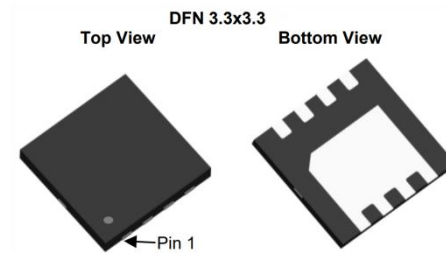




## Product Summary

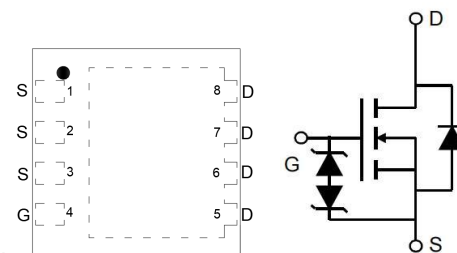
| $V_{(BR)DSS}$ | $R_{DS(ON)} \text{ max}$                 | $I_D \text{ max}$ |
|---------------|------------------------------------------|-------------------|
| 32V           | $<2.0\text{m}\Omega @V_{GS}=10\text{V}$  | 80A               |
|               | $<3.2\text{m}\Omega @V_{GS}=4.5\text{V}$ |                   |

## Package & Internal Circuit



## Description and Applications

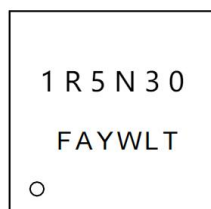
- SGT Power MOSFET technology
- Low  $R_{DS}$
- ESD protected
- Optimized for load switch
- High Current Capability
- RoHS and Halogen-Free Compliant
- Battery charging and discharging for NB battery pack
- Power switch for Adaptor/ Charger



## Ordering Information

| Part Number | Package Type | Package Qty       |
|-------------|--------------|-------------------|
| CFN1R5N30   | DFN3.3x3.3   | 5,000/Tape & Reel |

## Marking Information



Green product

1R5N30--Part Number

F-Fab location

A-Assembly location

Y--Year

W--Week

LT--Lot sequence

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

| Parameter                                      | Symbol         | Value      | Units              |
|------------------------------------------------|----------------|------------|--------------------|
| Drain-Source Voltage                           | $V_{DS}$       | 32         | V                  |
| Gate-Source Voltage                            | $V_{GS}$       | $\pm 20$   | V                  |
| Drain Current - Continuous                     | $I_D$          | 80         | A                  |
| Avalanche Current                              | $I_{AS}$       | 56         | A                  |
| Single Pulse Avalanche Energy $L=0.1\text{mH}$ | $E_{AS}$       | 155        | mJ                 |
| Power Dissipation $T_C=25^{\circ}\text{C}$     | $P_D$          | 56         | W                  |
| Operating and Storage Temperature Range        | $T_J, T_{STG}$ | -55 to 150 | $^{\circ}\text{C}$ |

## Thermal Characteristics

| Parameter                   | Symbol          | Typ | Max | Units                |
|-----------------------------|-----------------|-----|-----|----------------------|
| Maximum Junction-to-Ambient | $R_{\theta JA}$ | 50  | 60  | $^{\circ}\text{C/W}$ |
| Maximum Junction-to-Case    | $R_{\theta JC}$ | 1.8 | 2.2 | $^{\circ}\text{C/W}$ |

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

| Symbol                                  | Parameter                          | Conditions                                                                                                        | Min | Typ  | Max | Units |
|-----------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----|------|-----|-------|
| Static Characteristics                  |                                    |                                                                                                                   |     |      |     |       |
| BV <sub>DSS</sub>                       | Drain-Source Breakdown Voltage     | I <sub>D</sub> = 250μA, V <sub>GS</sub> =0V                                                                       | 32  |      |     | V     |
| I <sub>DSS</sub>                        | Zero Gate Voltage Drain Current    | V <sub>DS</sub> =32V, V <sub>GS</sub> =0V                                                                         |     |      | 1   | μA    |
|                                         |                                    | T <sub>J</sub> =55℃                                                                                               |     |      | 5   | μA    |
| I <sub>GSS</sub>                        | Gate-Body leakage current          | V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V                                                                       |     |      | ±10 | μA    |
| V <sub>GS(th)</sub>                     | Gate Threshold Voltage             | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                                          | 1.3 | 1.8  | 2.3 | V     |
| R <sub>DS(ON)</sub>                     | Drain-Source on-Resistance         | V <sub>GS</sub> =10V, I <sub>D</sub> =20A                                                                         |     | 1.7  | 2.0 | mΩ    |
|                                         |                                    | V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A                                                                        |     | 2.7  | 3.2 | mΩ    |
| g <sub>FS</sub>                         | Forward Transconductance           | V <sub>DS</sub> = 5V, I <sub>D</sub> =20A                                                                         |     | 85   |     | S     |
| R <sub>g</sub>                          | Gate resistance                    | f=1.0MHz                                                                                                          |     | 4.3  |     | Ω     |
| Dynamic Characteristics                 |                                    |                                                                                                                   |     |      |     |       |
| C <sub>iss</sub>                        | Input Capacitance                  | V <sub>GS</sub> =0V<br>V <sub>DS</sub> =16V<br>f=1.0MHz                                                           |     | 3308 |     | pF    |
| C <sub>oss</sub>                        | Output Capacitance                 |                                                                                                                   |     | 659  |     | pF    |
| C <sub>rss</sub>                        | Reverse Transfer Capacitance       |                                                                                                                   |     | 588  |     | pF    |
| Q <sub>g</sub>                          | Total Gate Charge                  | V <sub>GS</sub> =10V<br>V <sub>DS</sub> =16V<br>I <sub>D</sub> =20A                                               |     | 76   |     | nC    |
| Q <sub>gs</sub>                         | Gate Source Charge                 |                                                                                                                   |     | 8.1  |     | nC    |
| Q <sub>gd</sub>                         | Gate Drain Charge                  |                                                                                                                   |     | 18   |     | nC    |
| t <sub>D(on)</sub>                      | Turn-On Delay Time                 | V <sub>GS</sub> =10V<br>V <sub>DS</sub> =16V<br>R <sub>L</sub> =0.8Ω<br>R <sub>G</sub> =3Ω<br>I <sub>D</sub> =20A |     | 12   |     | ns    |
| t <sub>r</sub>                          | Turn-On Rise Time                  |                                                                                                                   |     | 18   |     | ns    |
| t <sub>D(off)</sub>                     | Turn-Off Delay Time                |                                                                                                                   |     | 42   |     | ns    |
| t <sub>f</sub>                          | Turn-Off Fall Time                 |                                                                                                                   |     | 26   |     | ns    |
| Drain-Source Body Diode Characteristics |                                    |                                                                                                                   |     |      |     |       |
| V <sub>SD</sub>                         | Body Diode Forward Voltage         | I <sub>s</sub> = 1A,V <sub>GS</sub> = 0V                                                                          |     | 0.67 |     | V     |
| t <sub>rr</sub>                         | Body Diode Reverse Recovery Time   | I <sub>F</sub> =20A<br>di/dt =100 A/μs                                                                            |     | 38   |     | ns    |
| Q <sub>rr</sub>                         | Body Diode Reverse Recovery Charge |                                                                                                                   |     | 37   |     | nC    |

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

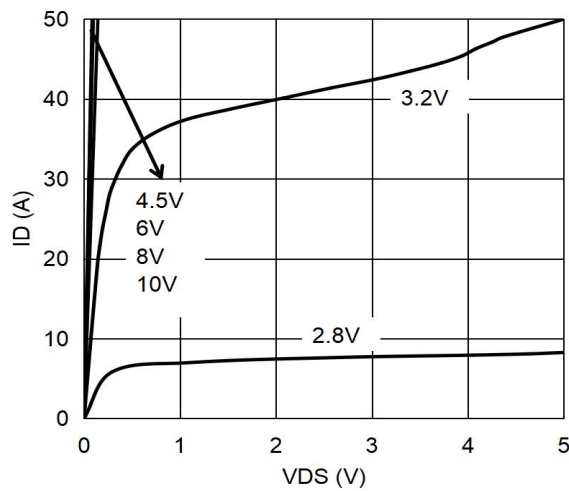


Figure 1: On-Region Characteristics

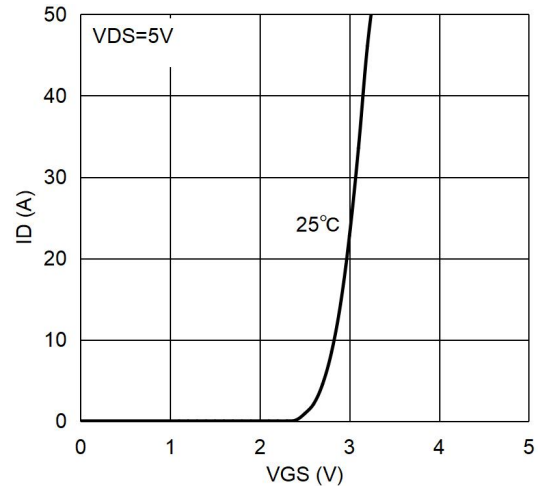


Figure 2: Transfer Characteristics

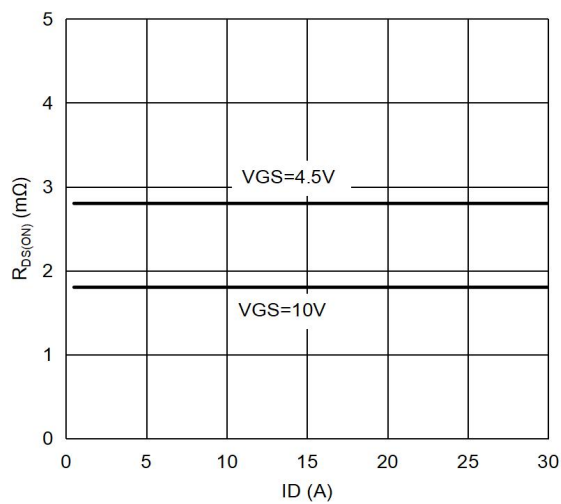


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

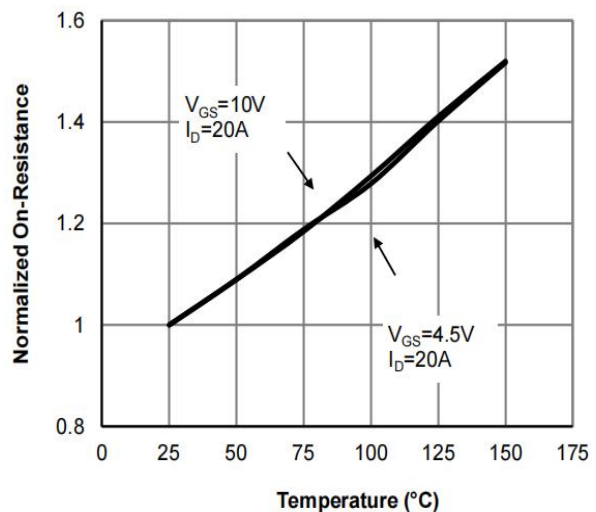


Figure 4: On-Resistance vs. Junction Temperature

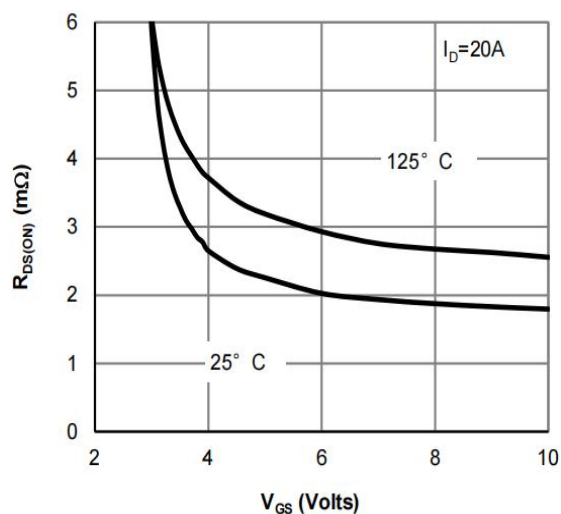


Figure 5: On-Resistance vs. Gate-Source Voltage

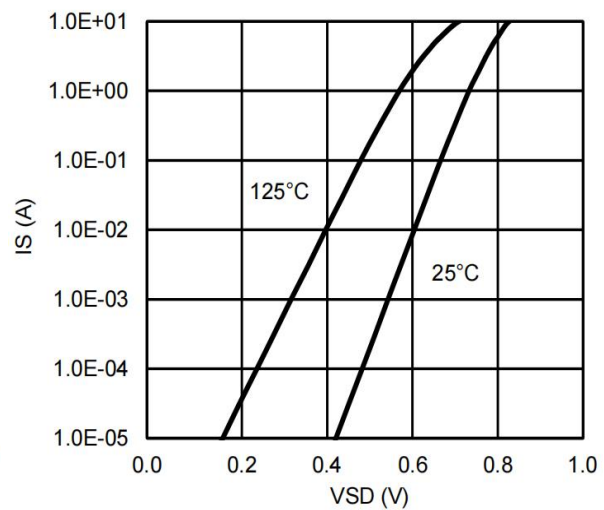


Figure 6: Body-Diode Characteristics

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

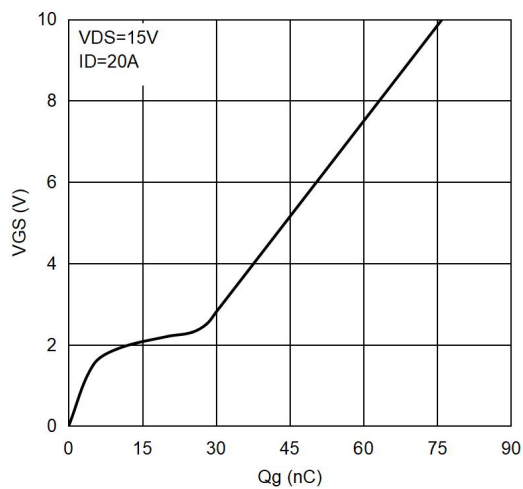


Figure 7: Gate-Charge Characteristics

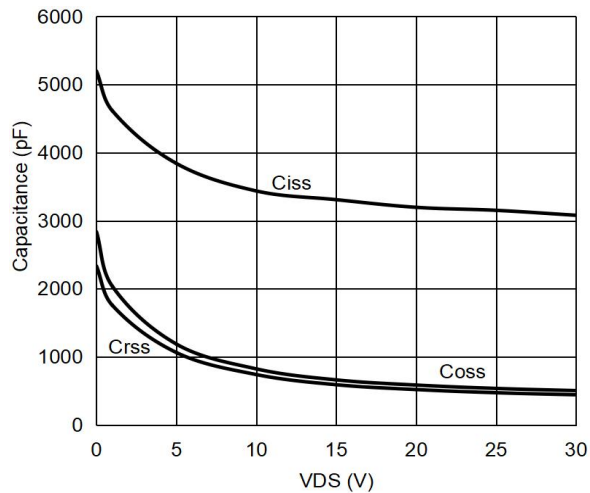


Figure 8: Capacitance Characteristics

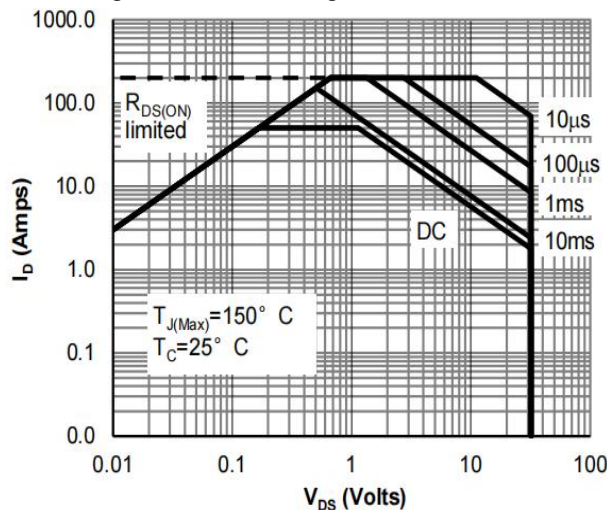


Figure 9: Maximum Forward Biased Safe Operating Area

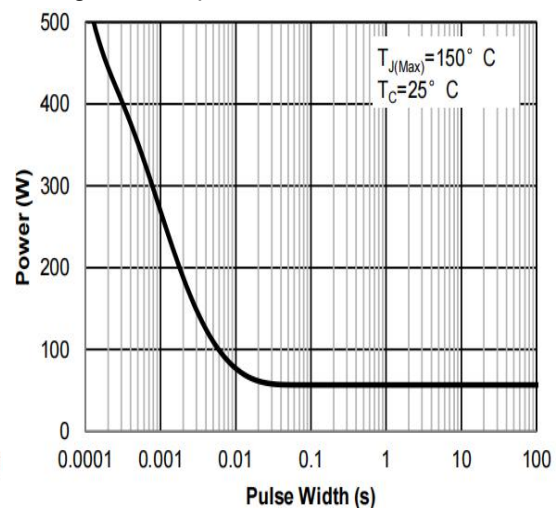


Figure 10: Single Pulse Power Rating Junction-to Case

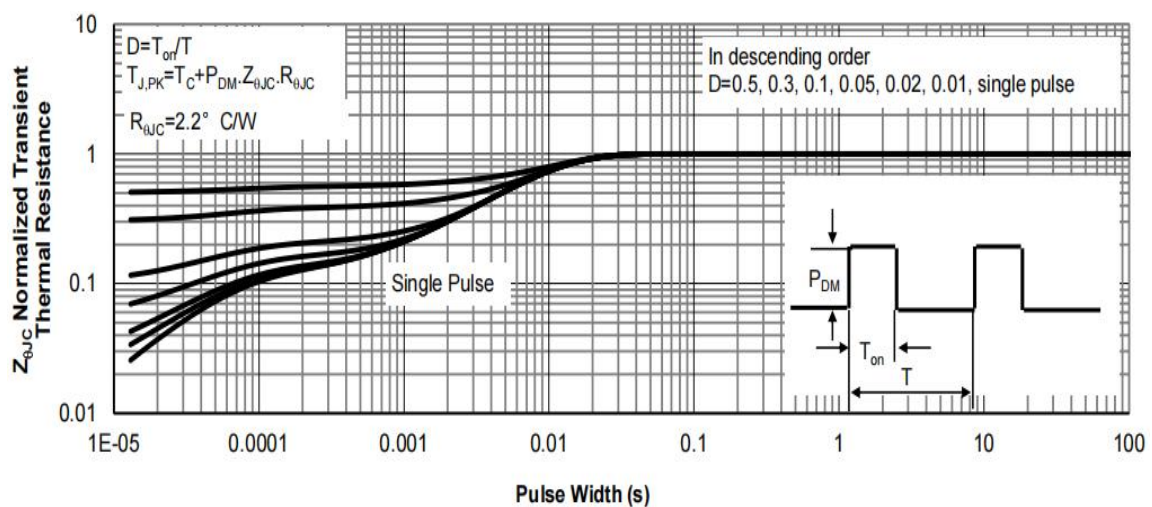
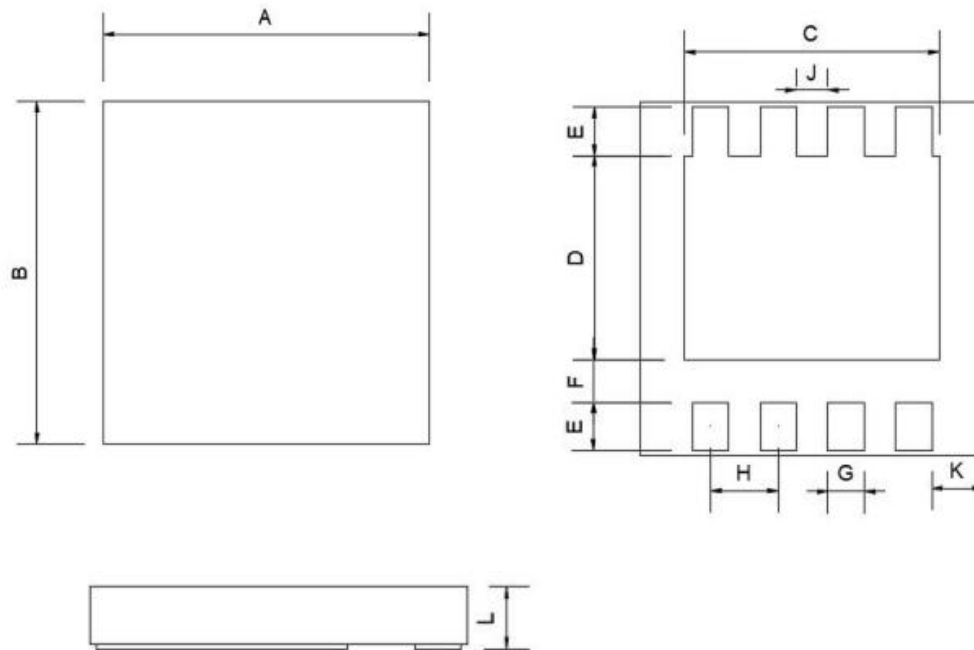


Figure 11: Normalized Maximum Transient Thermal Impedance

**DFN3.3x3.3 Package**



| DIM | MIN/mm | NOR/mm | MAX/mm |
|-----|--------|--------|--------|
| A   | 3.20   | 3.30   | 3.40   |
| B   | 3.20   | 3.30   | 3.40   |
| C   | 2.35   | 2.45   | 2.60   |
| D   | 1.80   | 1.90   | 2.00   |
| E   | 0.35   | 0.45   | 0.55   |
| F   | 0.30   | 0.40   | 0.50   |
| G   | 0.30   | 0.35   | 0.45   |
| H   | 0.55   | 0.65   | 0.75   |
| J   | 0.20   | 0.30   | 0.40   |
| K   | 0.40   | 0.50   | 0.60   |
| L   | 0.45   | 0.55   | 0.70   |

UNIT: mm

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