## General Description

FSMOS®

$R_{DS(ON)}$, low gate charge, fast switching and excellent avalanche characteristics. The low $V_{th}$ series is specially optimized for synchronous rectification systems with low driving voltage.

## Features

- Low $R_{DS(on)}$ & FOM (Figure of Merit)
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery

## Applications

- PD charger
- Motor driver
- Switching voltage regulator
- DC-DC convertor
- Switched mode power supply

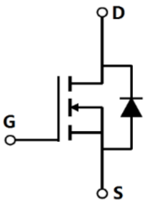
## Key Performance Parameters

| Parameter | Value | Unit |
|---|---|---|
| $V_{DS,\ min}$ @ $T_{j(max)}$ | 80 | V |
| $I_{D,\ pulse}$ | 48 | A |
| $R_{DS(ON)\ max}$ @ $V_{GS}$=10V | 8 | |
| $Q_g$ | 28.9 | nC |

## Marking Information

| Product Name | Package | Marking |
|---|---|---|
| SFS08R08BF | SOP8 | SFS08R08B |

## Package & Pin information



## Absolute Maximum Ratings at $T_j$=25°C unless otherwise noted

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain source voltage | $V_{DS}$ | 80 | V |
| Gate source voltage | $V_{GS}$ | ±20 | V |
| Continuous drain current[1), $T_C$=25 °C | $I_D$ | 16 | A |
| Pulsed drain current[2), $T_C$=25 °C | $I_{D,\ pulse}$ | 48 | A |
| Continuous diode forward current[1), $T_C$=25 °C | $I_S$ | 16 | A |
| Diode pulsed current[2), $T_C$=25 °C | $I_{S,\ Pulse}$ | 48 | A |

## Dynamic Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test condition |
|---|---|---|---|---|---|---|
| Input capacitance | $C_{iss}$ | | 2028 | | pF | $V_{GS}$=0 V,<br>$V_{DS}$=25 V,<br>kHz |
| Output capacitance | $C_{oss}$ | | 717 | | pF | |
| Reverse transfer capacitance | $C_{rss}$ | | 53.9 | | pF | |
| Turn-on delay time | $t_{d(on)}$ | | 22.2 | | ns | $V_{GS}$=10 V,<br>$V_{DS}$=50 V,<br>$R_G$=2.5<br>$I_D$=25 A |
| Rise time | $t_r$ | | 6.3 | | ns | |
| Turn-off delay time | $t_{d(off)}$ | | 47.5 | | ns | |
| Fall time | $t_f$ | | 8.8 | | ns | |

## Gate Charge Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test condition |
|---|---|---|---|---|---|---|
| Total gate charge | $Q_g$ | | 28.9 | | nC | $V_{GS}$=10 V,<br>$V_{DS}$=50 V,<br>$I_D$=25 A |
| Gate-source charge | $Q_{gs}$ | | 5.4 | | nC | |
| Gate-drain charge | $Q_{gd}$ | | 4.9 | | [redacted] | |
| Gate plateau voltage | $V_{plateau}$ | | 3.5 | | V | |

Bo316.63 450.55 0.48001 19.92 ref316.63 450.0716 101 /P <</MCID 116/Lang (en-US)>>BDC BT/F2

## Electrical Characteristics Diagrams

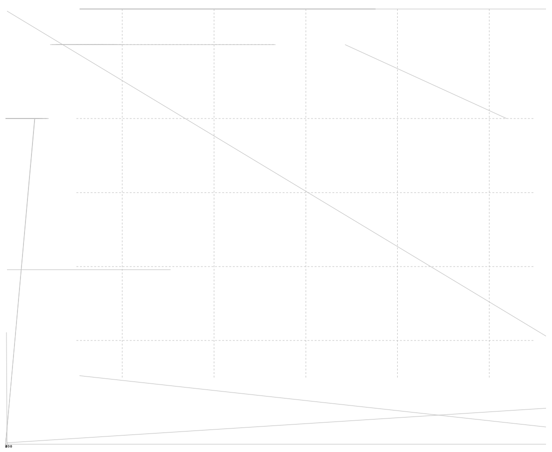


**Figure 1. Typ. output characteristics**

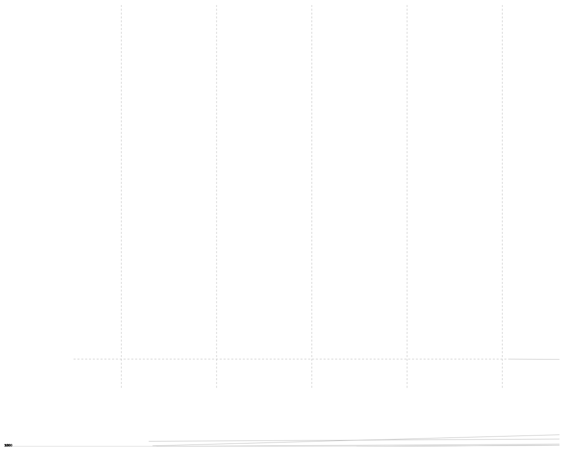


**Figure 2. Typ. transfer characteristics**

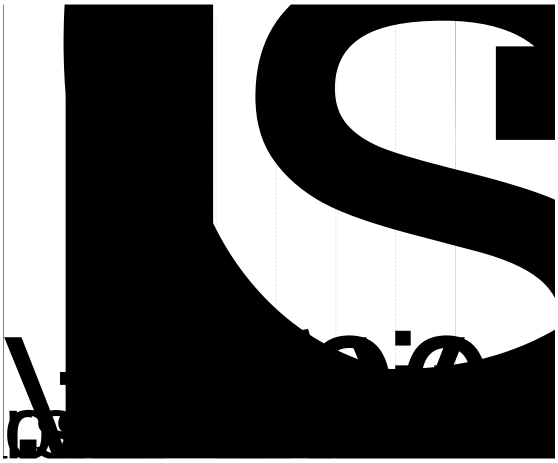


**Figure 3. Typ. capacitances**

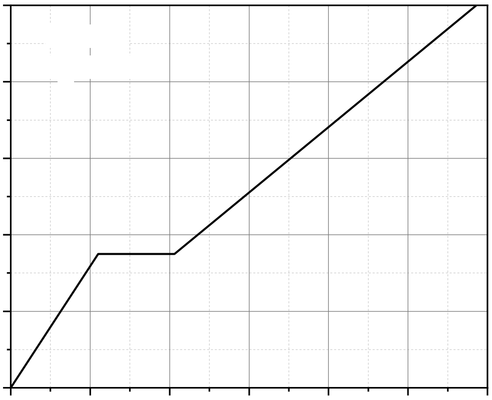


**Figure 4. Typ. gate charge**

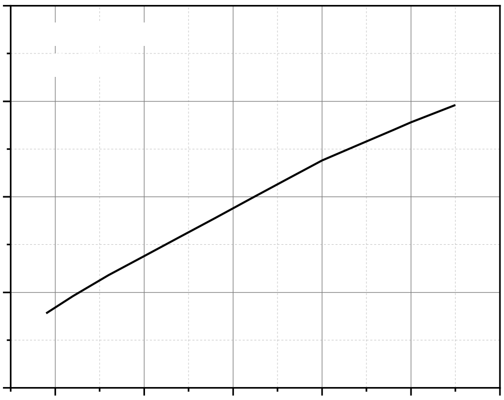


**Figure 5. Drain-source breakdown voltage**

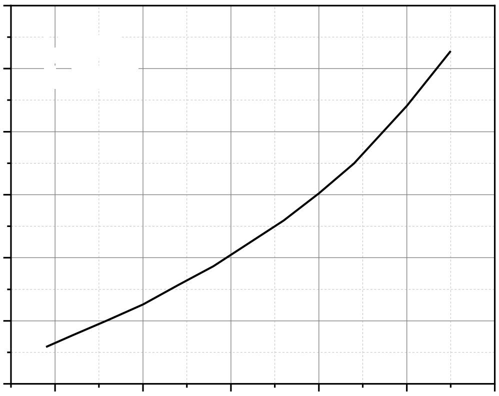


**Figure 6. Drain-source on-state resistance**

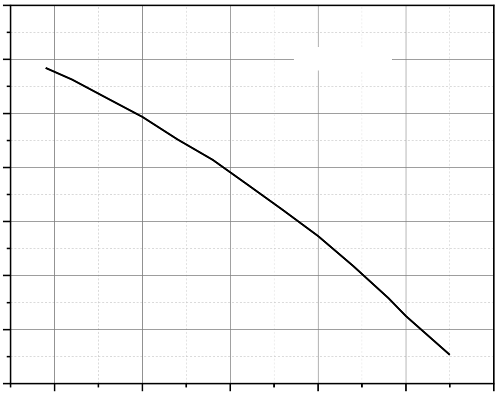


Figure 7. Threshold voltage

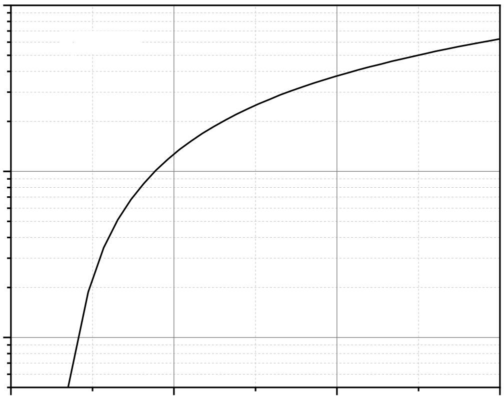


Figure 8. Forward characteristic of body diode

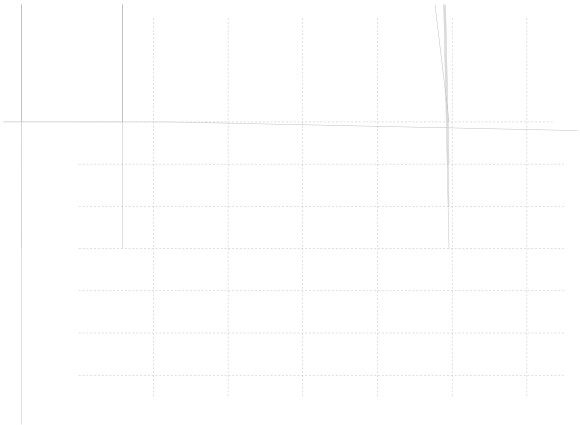


Figure 9. Drain-source on-state resistance

Figure 10. Drain current

Figure 11. Safe operation area $T_C$=25 °C

## Test circuits and waveforms

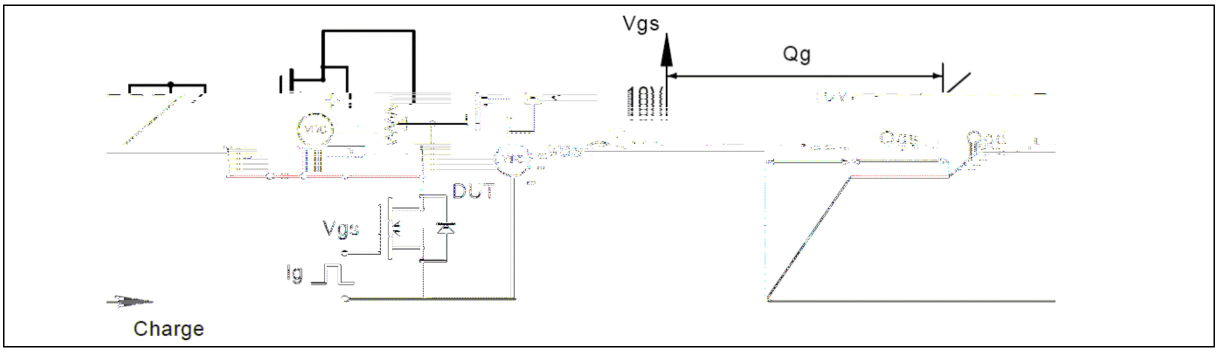


Figure 1. Gate charge test circuit & waveform

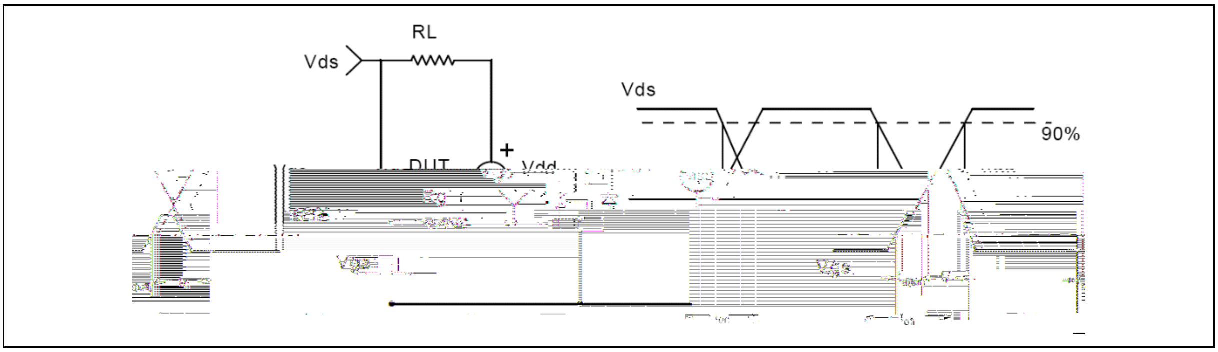


Figure 2. Switching time test circuit & waveforms

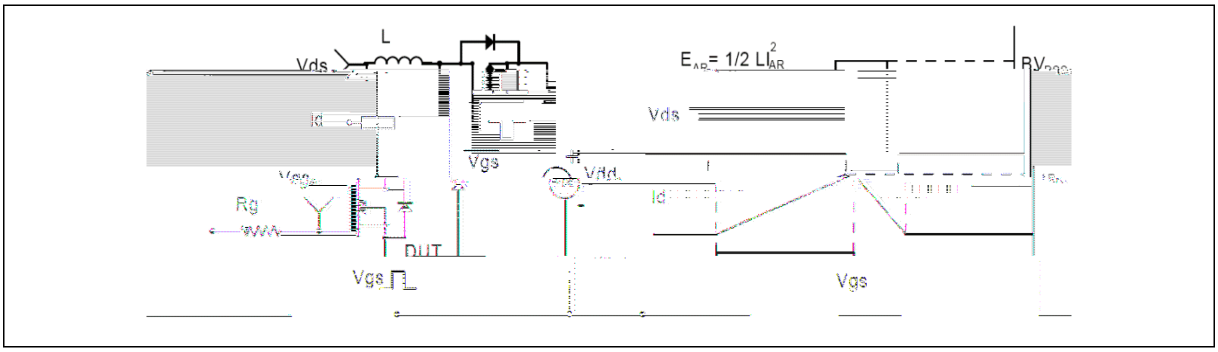


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

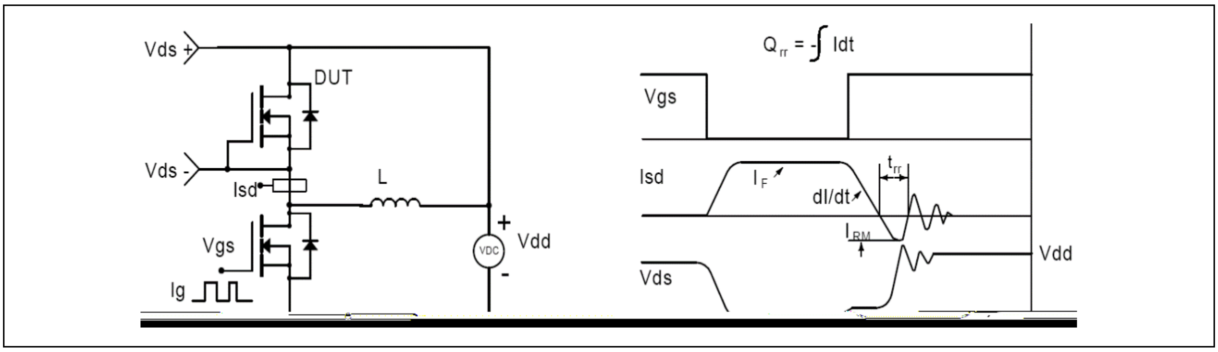
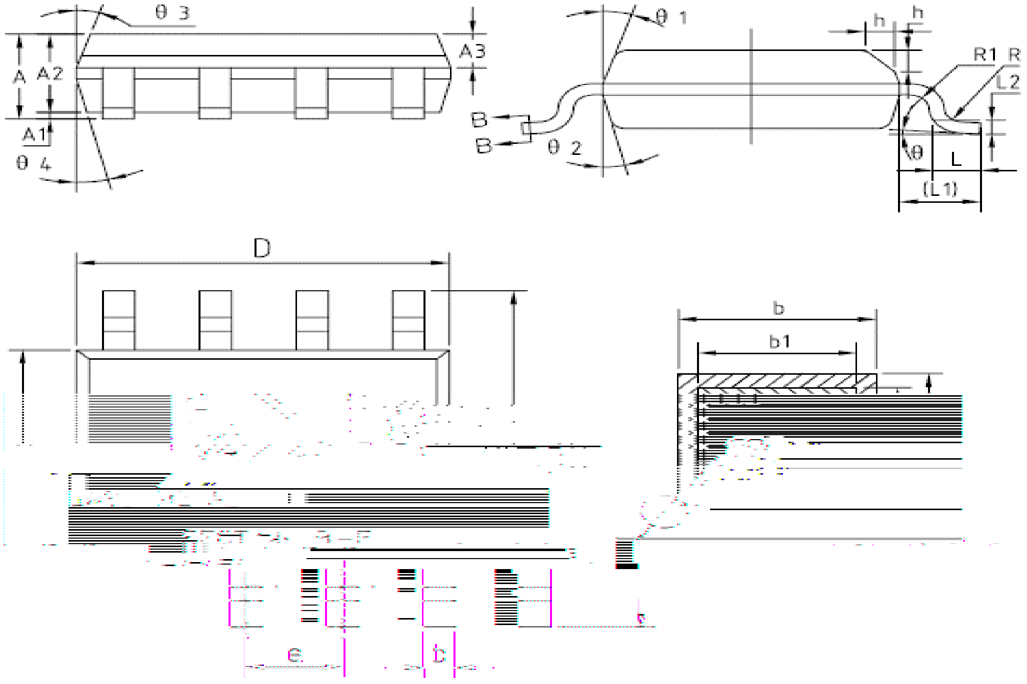


Figure 4. Diode reverse recovery test circuit & waveforms

## Package Information



| Symbol | mm | | |
|---|---|---|---|
| | Min | Nom | Max |
| A | 1.35 | 1.55 | 1.75 |
| A1 | 0.10 | 0.15 | 0.25 |
| A2 | 1.25 | 1.40 | 1.65 |
| A3 | 0.50 | 0.60 | 0.70 |
| b | 0.38 | - | 0.51 |
| L1 | 1.04 REF | | |
| L2 | 0.25 BSC | | |
| b1 | 0.37 | 0.42 | 0.47 |
| c | 0.18 | - | 0.25 |
| c1 | 0.17 | 0.20 | 0.23 |
| D | 4.80 | 4.90 | 5 |
| E | 5.80 | 6.00 | 6.20 |
| E1 | 3.80 | 3.90 | 4.00 |
| e | 1.17 | 1.27 | 1.37 |
| L | 0.45 | 0.60 | 0.80 |
| R | 0.07 | - | - |
| R1 | 0.07 | - | - |
| h | 0.30 | 0.40 | 0.50 |
| | 0 | - | |
| | | | |
| | | | |
| | | | |
| | | | |

Version 1: SOP8-K package outline dimension

## Ordering Information

| Package Type | Units/ Reel | Reels / Inner Box | Units/ Inner Box | Inner Boxes/ Carton Box | Units/ Carton Box |
|---|---|---|---|---|---|
| SOP8-K | 2500 | 2 | 5000 | 6 | 30000 |

## Product Information

| Product | Package | Pb Free | RoHS | Halogen Free |
|---|---|---|---|---|
| SFS08R08BF | SOP8 | yes | yes | yes |

## Legal Disclaimer

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