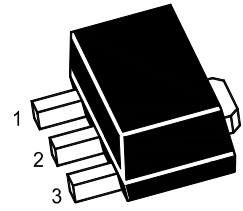
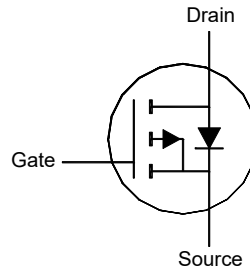


SFTP9435U

P-Channel Enhancement Mode MOSFET

Features

- Surface-mounted package



1.Gate 2.Drain 3.Source
SOT-89 Plastic Package

Applications

- Portable appliances
- Battery management

Absolute Maximum Ratings (at $T_a = 25^\circ\text{C}$ unless otherwise specified)

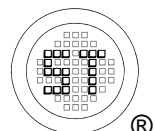
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	$-I_D$	4.2	A
Peak Drain Current, Pulsed ¹⁾	$-I_{DM}$	20	A
Power Dissipation ²⁾	P_D	1.25	W
Operating Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$

¹⁾ Pulse Test: Pulse Width $\leq 100 \mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{j(\text{MAX})} = 150^\circ\text{C}$.

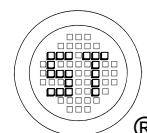
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air, $t \leq 10 \text{ s}$.



SFTP9435U

Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250 \mu\text{A}$	$-BV_{DSS}$	30	-	-	V
Drain-Source Leakage Current at $-V_{DS} = 30 \text{ V}$	$-I_{DSS}$	-	-	1	μA
Gate Leakage Current at $V_{GS} = \pm 20 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $-I_D = 250 \mu\text{A}$	$-V_{GS(th)}$	1	-	3	V
Drain-Source On-State Resistance at $-V_{GS} = 10 \text{ V}$, $-I_D = 4 \text{ A}$ at $-V_{GS} = 4.5 \text{ V}$, $-I_D = 2 \text{ A}$	$R_{DS(on)}$	- -	- -	50 90	m Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $-V_{DS} = 5 \text{ V}$, $-I_D = 4 \text{ A}$	g_{fs}	-	10	-	S
Gate resistance at $V_{DS} = 0 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	R_g	-	4.8	-	Ω
Input Capacitance at $V_{GS} = 0 \text{ V}$, $-V_{DS} = 15 \text{ V}$, $f = 1 \text{ MHz}$	C_{iss}	-	1195	-	pF
Output Capacitance at $V_{GS} = 0 \text{ V}$, $-V_{DS} = 15 \text{ V}$, $f = 1 \text{ MHz}$	C_{oss}	-	125	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0 \text{ V}$, $-V_{DS} = 15 \text{ V}$, $f = 1 \text{ MHz}$	C_{rss}	-	94	-	pF
Total Gate Charge at $-V_{DS} = 15 \text{ V}$, $-I_D = 4 \text{ A}$, $-V_{GS} = 10 \text{ V}$ at $-V_{DS} = 15 \text{ V}$, $-I_D = 4 \text{ A}$, $-V_{GS} = 4.5 \text{ V}$	Q_g	- -	19.7 9	- -	nC
Gate-Source Charge at $-V_{DS} = 15 \text{ V}$, $-I_D = 4 \text{ A}$, $-V_{GS} = 10 \text{ V}$	Q_{gs}	-	4.7	-	nC
Gate-Drain Charge at $-V_{DS} = 15 \text{ V}$, $-I_D = 4 \text{ A}$, $-V_{GS} = 10 \text{ V}$	Q_{gd}	-	3	-	nC
Turn-On Delay Time at $-V_{DS} = 15 \text{ V}$, $-V_{GS} = 10 \text{ V}$, $-I_D = 4 \text{ A}$, $R_g = 3.3 \Omega$	$t_{d(on)}$	-	9.3	-	nS
Turn-On Rise Time at $-V_{DS} = 15 \text{ V}$, $-V_{GS} = 10 \text{ V}$, $-I_D = 4 \text{ A}$, $R_g = 3.3 \Omega$	t_r	-	31	-	nS
Turn-Off Delay Time at $-V_{DS} = 15 \text{ V}$, $-V_{GS} = 10 \text{ V}$, $-I_D = 4 \text{ A}$, $R_g = 3.3 \Omega$	$t_{d(off)}$	-	14	-	nS
Turn-Off Fall Time at $-V_{DS} = 15 \text{ V}$, $-V_{GS} = 10 \text{ V}$, $-I_D = 4 \text{ A}$, $R_g = 3.3 \Omega$	t_f	-	2.8	-	nS
Body-Diode PARAMETERS					
Body Diode Voltage at $-I_s = 1 \text{ A}$, $V_{GS} = 0 \text{ V}$	$-V_{SD}$	-	-	1.3	V
Body-Diode Continuous Current	$-I_s$	-	-	4.2	A
Body Diode Reverse Recovery Time at $-I_s = 4 \text{ A}$, $di/dt = 100 \text{ A} / \mu\text{s}$	t_{rr}	-	9.7	-	nS
Body Diode Reverse Recovery Charge at $-I_s = 4 \text{ A}$, $di/dt = 100 \text{ A} / \mu\text{s}$	Q_{rr}	-	4	-	nC



Electrical Characteristics Curves

Fig. 1 Typical Output Characteristics

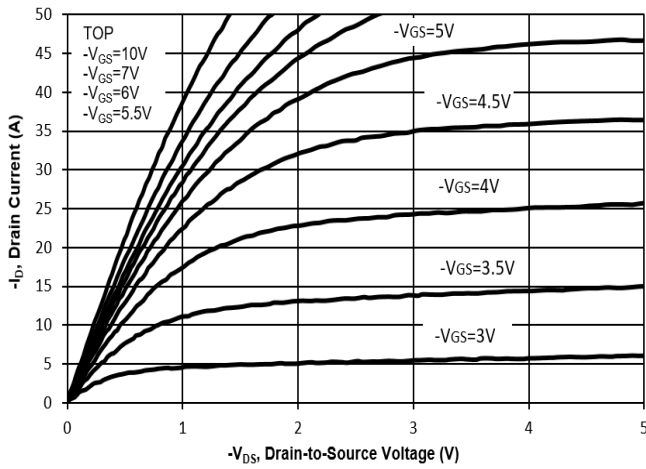


Fig. 2 Typical Transfer Characteristics

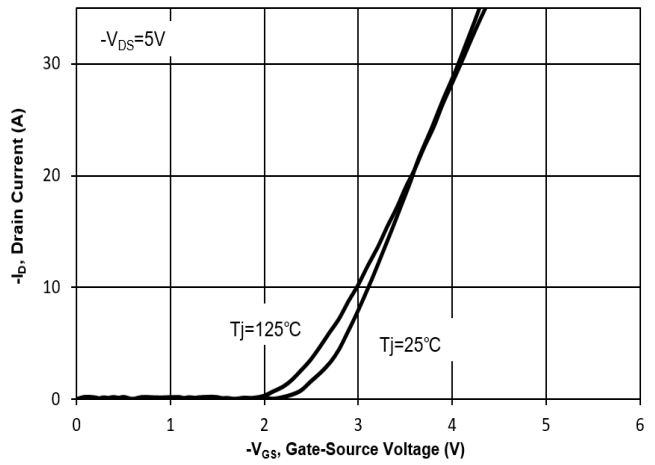


Fig. 3 On-Resistance vs. Drain Current

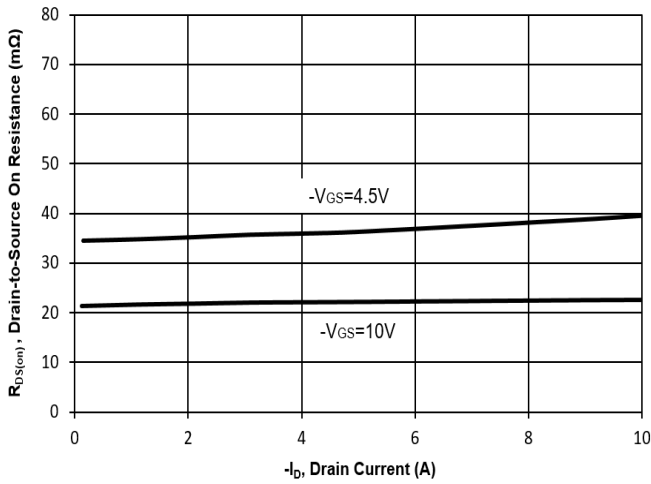


Fig. 4 On-Resistance vs. Gate-Source Voltage

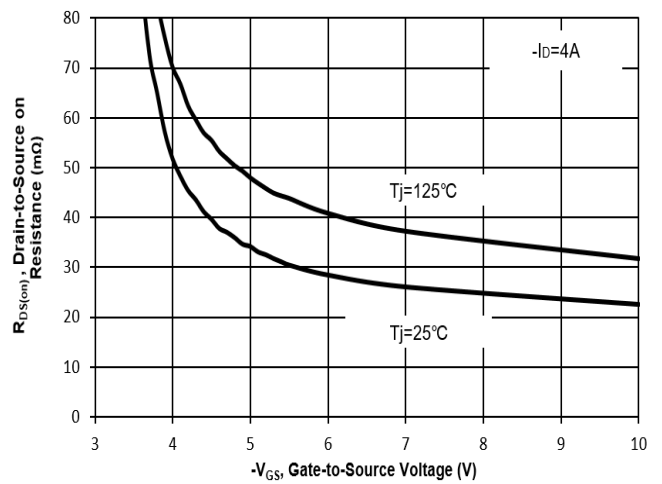


Fig. 5 On-Resistance vs. Tj

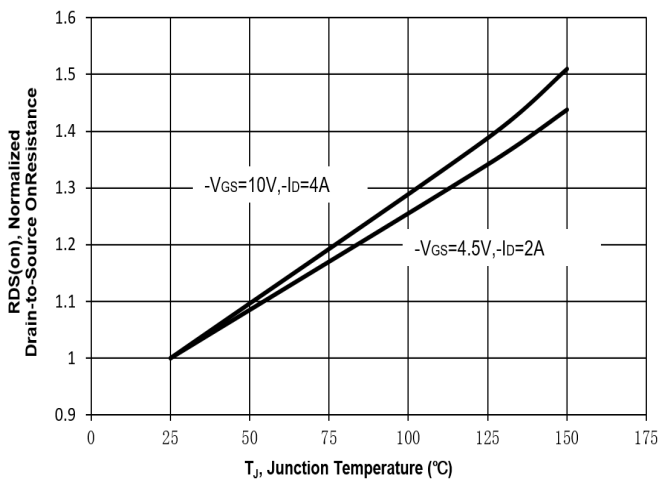
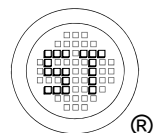
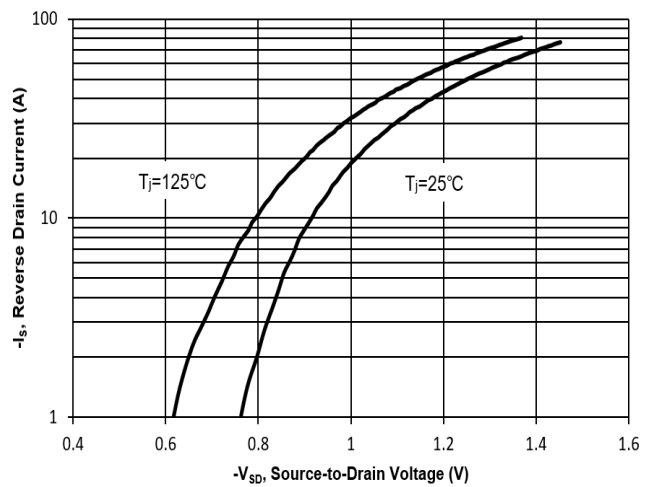


Fig. 6 Typical Body-Diode Forward Characteristics



Electrical Characteristics Curves

Fig. 7 Typical Junction Capacitance

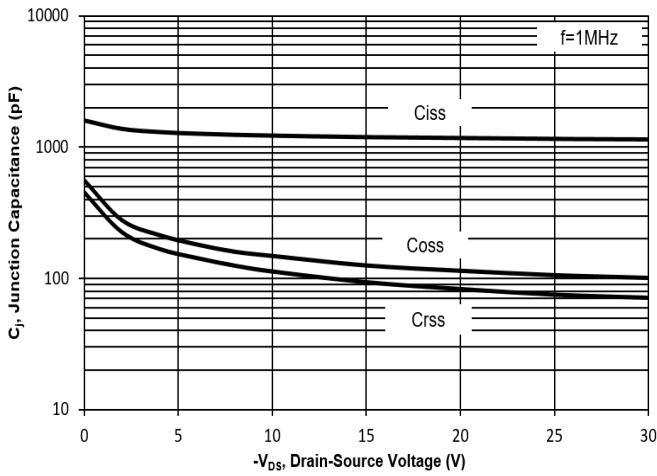


Fig. 8 Drain-Source Leakage Current vs. T_j

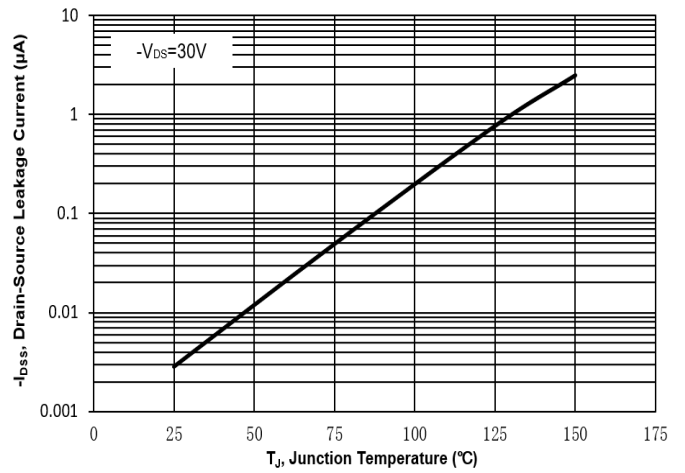


Fig. 9 $V_{(BR)DSS}$ vs. Junction Temperature

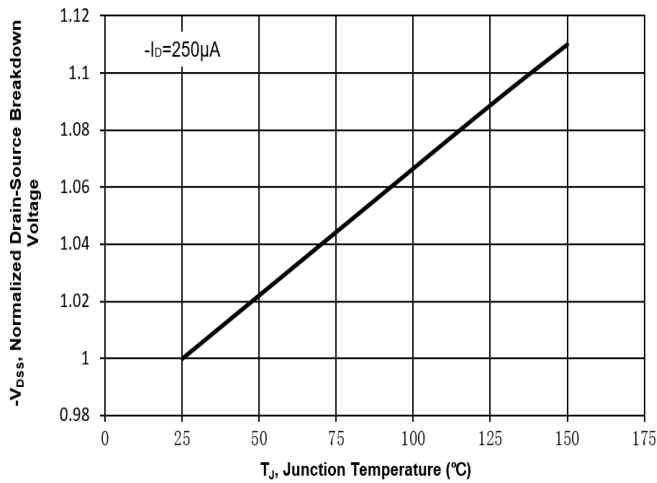


Fig. 10 Gate Threshold Variation vs. T_j

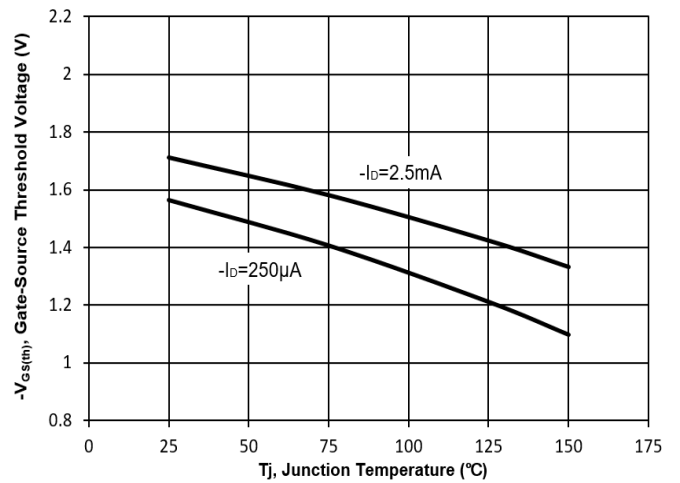
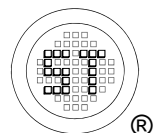
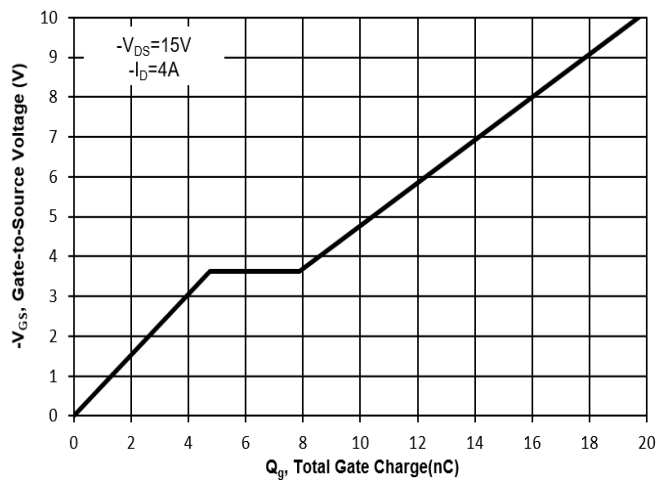


Fig. 11 Gate Charge



Test Circuits

Fig.1-1 Switching times test circuit

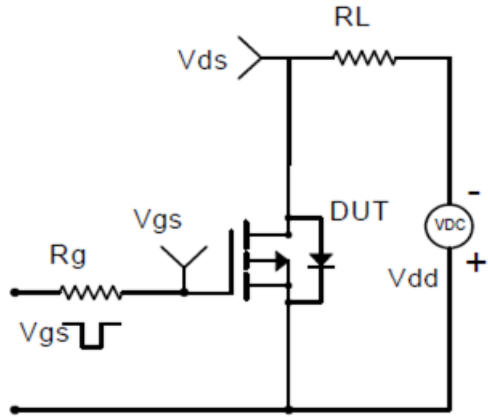


Fig.1-2 Switching Waveform

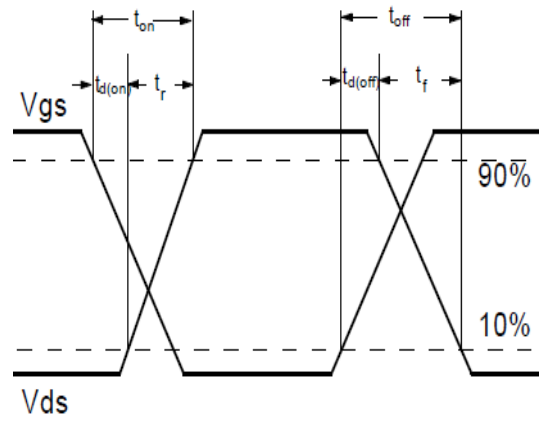


Fig.2-1 Gate charge test circuit

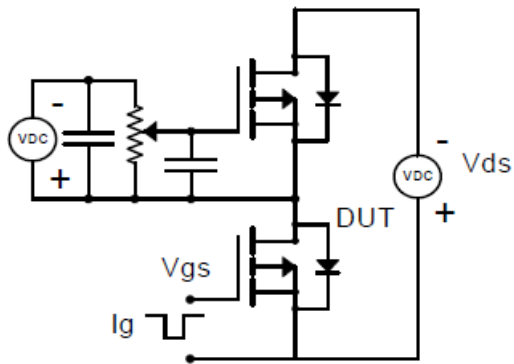
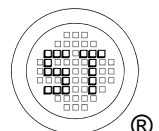
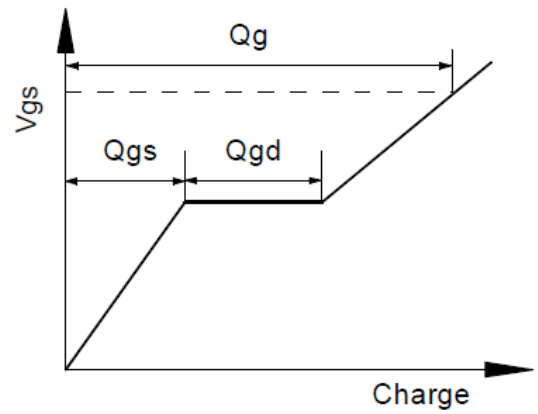


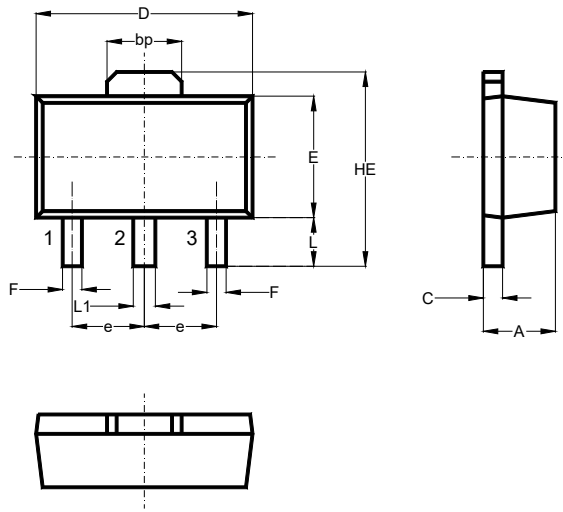
Fig.2-2 Gate charge waveform



SFTP9435U

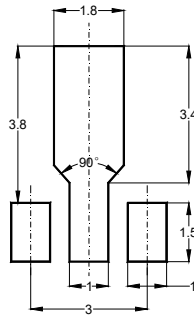
Package Outline (Dimensions in mm)

SOT-89



Unit	A	bp	C	D	E	F	HE	e	L	L1
mm	1.6	1.60	0.5	4.6	2.6	0.45	4.25	1.5	1.05	0.51
	1.4	1.50	0.3	4.4	2.4	0.35	3.75	typ.	0.95	0.41

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-89	12	8 ± 0.1	0.315 ± 0.004	178	7	1,000
				330	13	4,000

Marking information

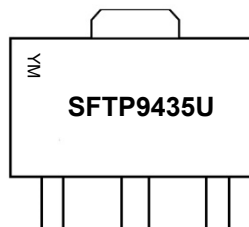
" SFTP9435U " = Part No.

" YM " = Date Code Marking

" Y " = Year

" M " = Month

Font type: Arial



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