

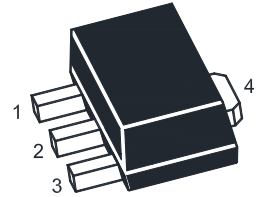
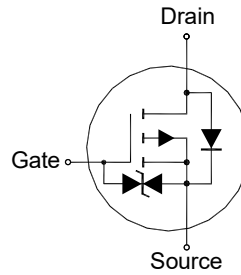
SFTP0602KU

P-Channel Enhancement Mode MOSFET

Features

- Low drive current
- High speed switching
- Typical ESD Protection HBM Class 2

Classification	Voltage Range(V)
0A	< 125
0B	125 to < 250
1A	250 to < 500
1B	500 to < 1000
1C	1000 to < 2000
2	2000 to < 4000
3A	4000 to < 8000
3B	≥ 8000



1.Gate 2.Drain 3.Source 4.Drain
SOT-89 Plastic Package

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

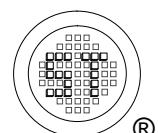
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	$-I_D$	1.5	A
Peak Drain Current, Pulsed ¹⁾	$-I_{DM}$	10	A
Power Dissipation	P_D	1.5	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	83.3	$^\circ\text{C/W}$

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

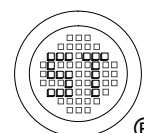
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



SFTP0602KU

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250 \mu\text{A}$	$-V_{(BR)DSS}$	60	-	-	V
Zero Gate Voltage Drain Current at $-V_{DS} = 60 \text{ V}$	$-I_{DSS}$	-	-	1	μA
Gate-Source Leakage at $V_{GS} = \pm 16 \text{ V}$	I_{GSS}	-	-	± 10	μA
Gate-Source Threshold Voltage at $V_{DS} = V_{DS}, I_D = 250 \mu\text{A}$	$-V_{GS(th)}$	1	-	2	V
Drain-Source On-State Resistance at $-V_{GS} = 10 \text{ V}, -I_D = 0.75 \text{ A}$ at $-V_{GS} = 4.5 \text{ V}, -I_D = 0.75 \text{ A}$	$R_{DS(on)}$	-	-	607 868	m Ω
DYNAMIC PARAMETERS					
Forward Transfer Admittance at $-V_{DS} = 10 \text{ V}, -I_D = 0.75 \text{ A}$	g_{FS}	-	1.6	-	S
Gate resistance at $V_{DS} = 0 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	R_g	-	610	-	Ω
Input Capacitance at $-V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	227	-	pF
Output Capacitance at $-V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{oss}	-	30	-	pF
Reverse Transfer Capacitance at $-V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{rss}	-	18	-	pF
Total Gate Charge at $-V_{DS} = 30 \text{ V}, -I_D = 1 \text{ A}, -V_{GS} = 10 \text{ V}$ at $-V_{DS} = 30 \text{ V}, -I_D = 1 \text{ A}, -V_{GS} = 4.5 \text{ V}$	Q_g	-	6 3	-	nC
Gate Source Charge at $-V_{DS} = 30 \text{ V}, -I_D = 1 \text{ A}, -V_{GS} = 10 \text{ V}$	Q_{gs}	-	1	-	nC
Gate Drain Charge at $-V_{DS} = 30 \text{ V}, -I_D = 1 \text{ A}, -V_{GS} = 10 \text{ V}$	Q_{gd}	-	1.2	-	nC
Turn-On Delay Time at $-V_{DD} = 30 \text{ V}, -I_D = 0.75 \text{ A}, -V_{GS} = 10 \text{ V}, R_G = 4.7 \Omega$	$t_{d(on)}$	-	179	-	ns
Turn-On Rise Time at $-V_{DD} = 30 \text{ V}, -I_D = 0.75 \text{ A}, -V_{GS} = 10 \text{ V}, R_G = 4.7 \Omega$	t_r	-	60	-	ns
Turn-Off Delay Time at $-V_{DD} = 30 \text{ V}, -I_D = 0.75 \text{ A}, -V_{GS} = 10 \text{ V}, R_G = 4.7 \Omega$	$t_{d(off)}$	-	145	-	ns
Turn-Off Fall Time at $-V_{DD} = 30 \text{ V}, -I_D = 0.75 \text{ A}, -V_{GS} = 10 \text{ V}, R_G = 4.7 \Omega$	t_f	-	44	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $V_{GS} = 0 \text{ V}, -I_S = 1.5 \text{ A}$	$-V_{SD}$	-	-	0.9	V
Body Diode Reverse Recovery Time at $-I_S = 1 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	t_{rr}	-	117	-	ns
Body Diode Reverse Recovery Charge at $-I_S = 1 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$	Q_{rr}	-	71	-	nC



Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

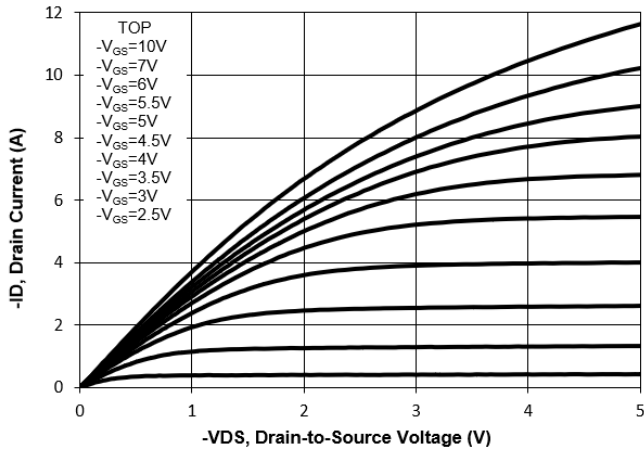


Fig. 2 Typical Transfer Characteristic

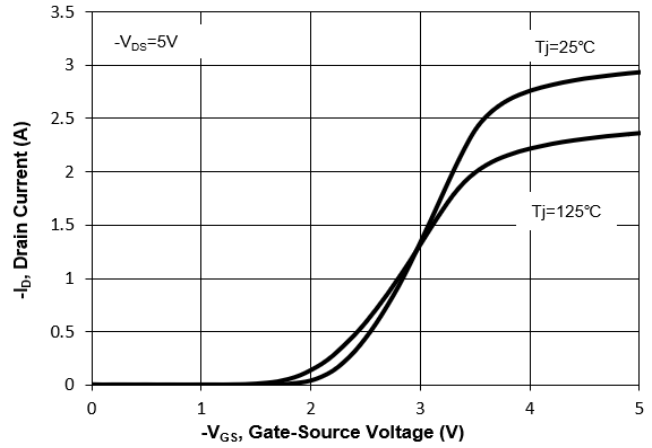


Fig. 3 on-Resistance vs Drain Current

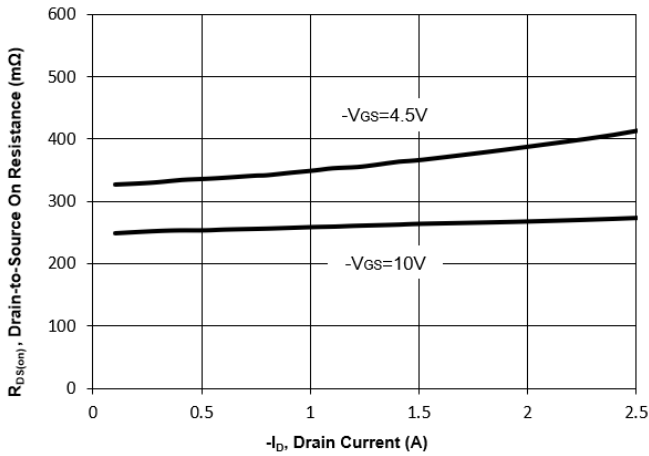


Fig. 4 on-Resistance vs. Gate Voltage

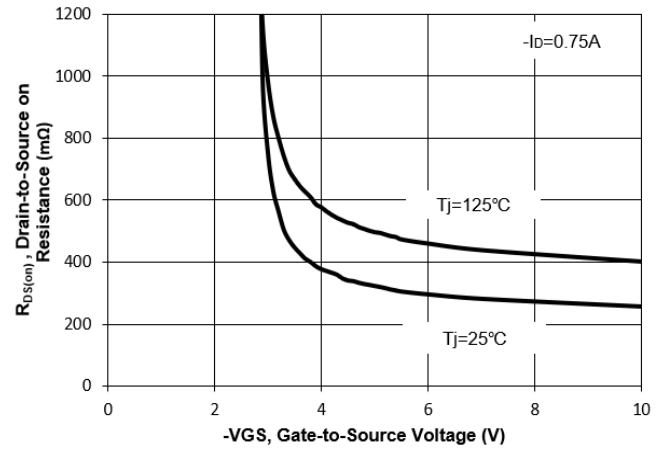


Fig. 5 on-Resistance vs. Tj

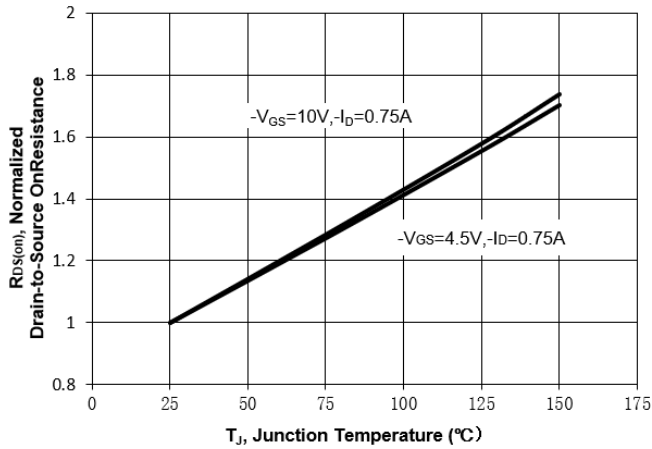
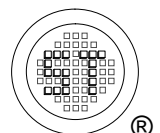
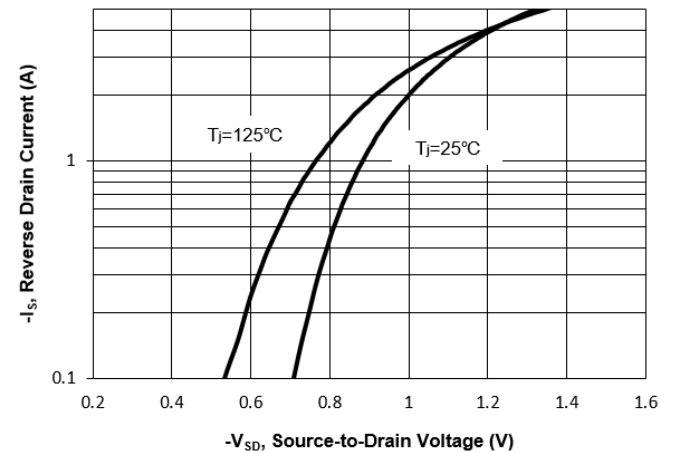


Fig. 6 Typical Forward Characteristic



Electrical Characteristics Curves

Fig. 7 Typical Junction Capacitance

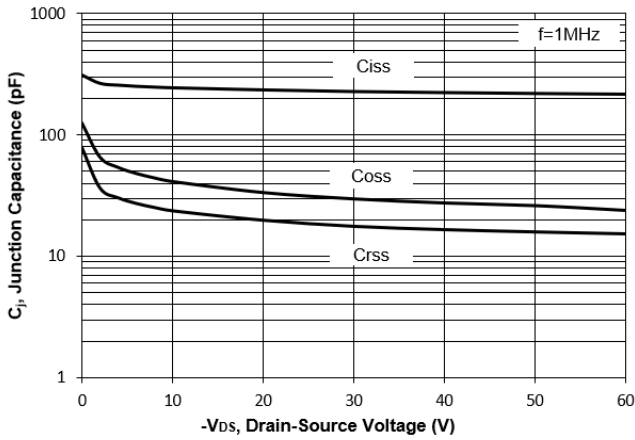


Fig. 8 Drain-Source Leakage Current vs. T_J

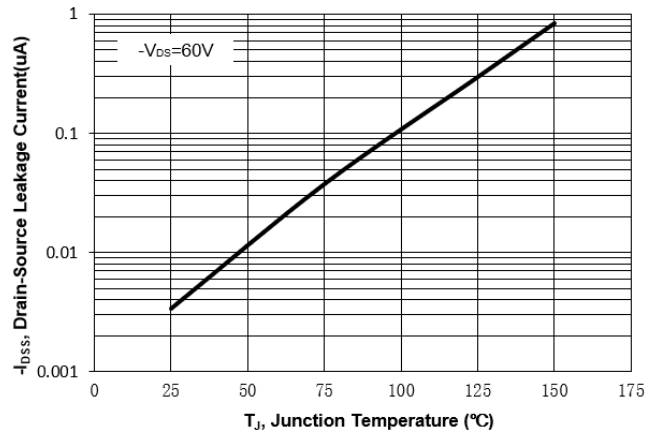


Fig. 9 V_{(BR)DSS} vs. Junction Temperature

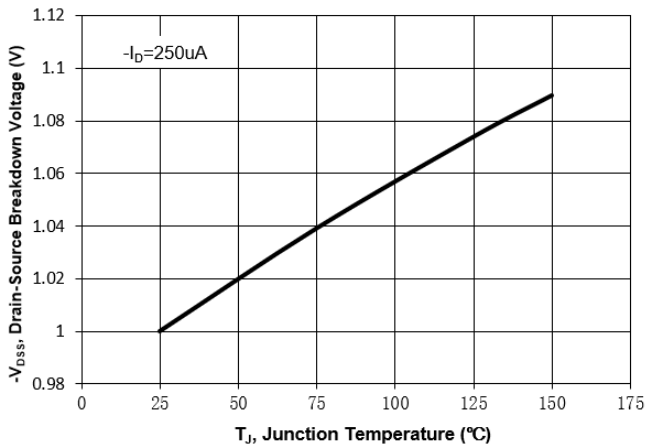


Fig. 10 Gate Threshold Variation vs. T_J

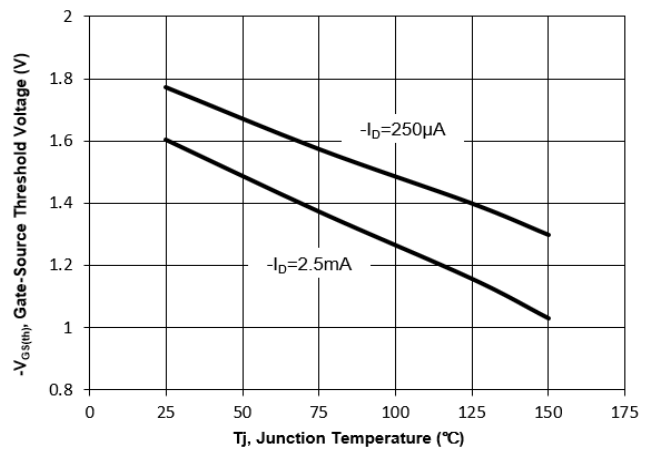


Fig. 11 Gate Charge

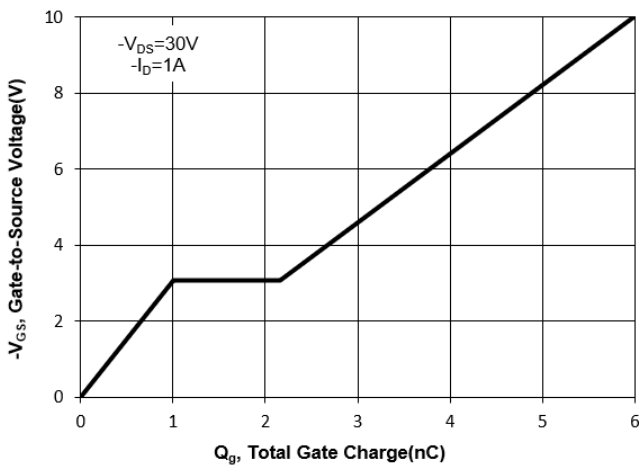
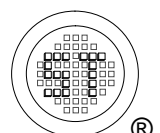
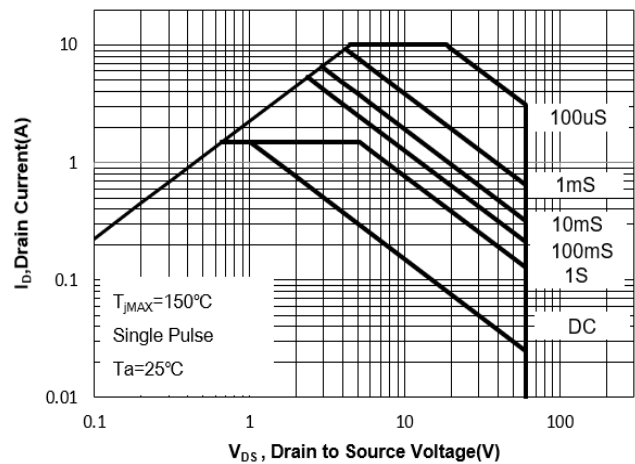


Fig. 12 Safe Operation Area



Test Circuits

Fig.1-1 Switching times test circuit

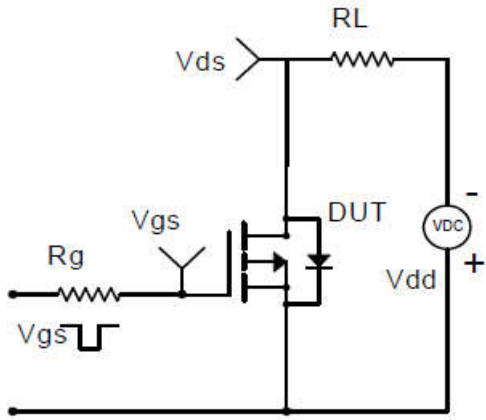


Fig.1-2 Switching Waveform

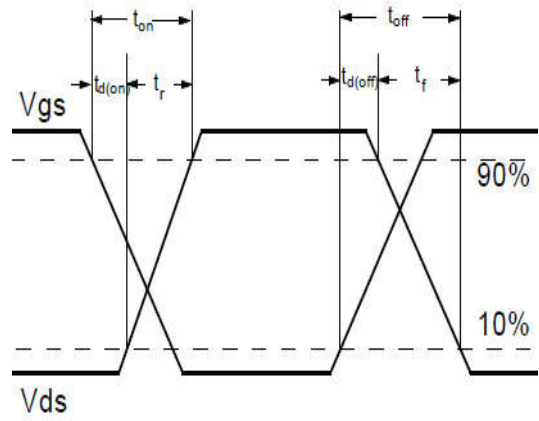


Fig.2-1 Gate charge test circuit

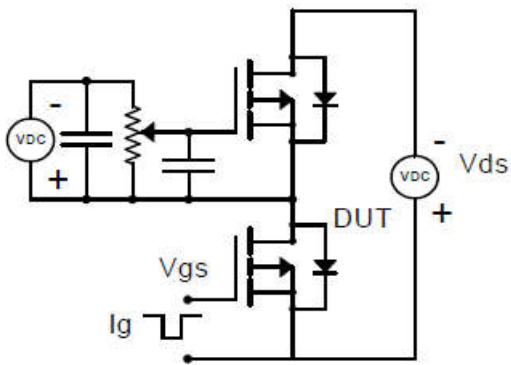
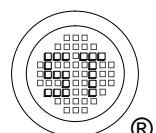
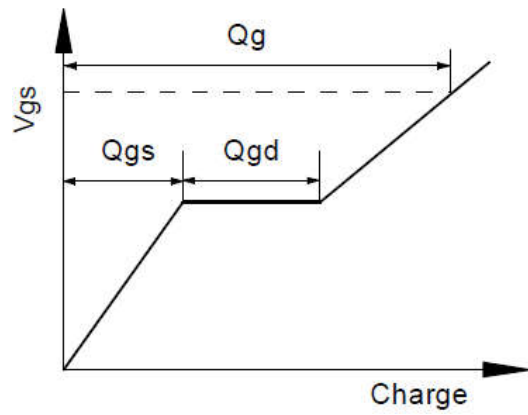


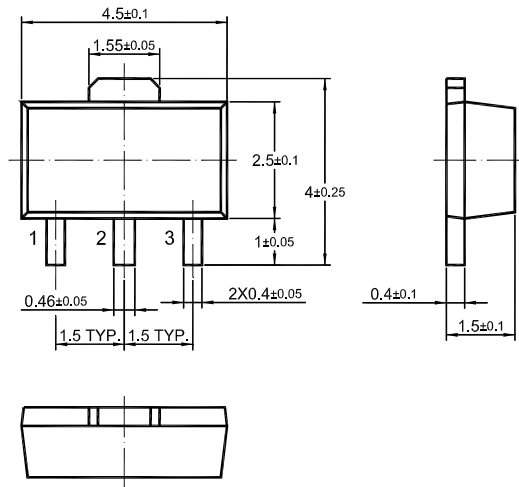
Fig.2-2 Gate charge waveform



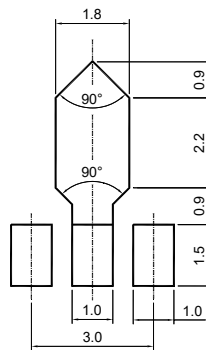
SFTP0602KU

Package Outline (Dimensions in mm)

SOT-89



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

" SFTP0602KU " = Part No.

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

