

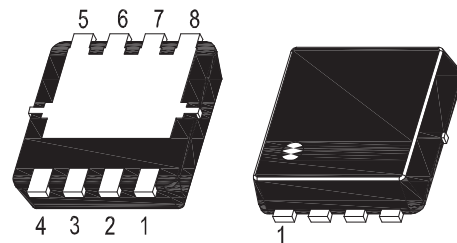
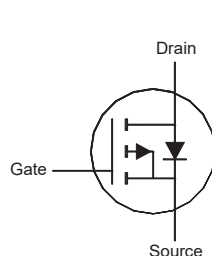
P-Channel Enhancement Mode MOSFET

Features

- Halogen and Antimony Free(HAF),
RoHS compliant

Applications

- Notebook AC-in Load Switch
- Battery Protection Charge/Discharge
- Motor appliances
- High power inverter system



1. Source 2. Source 3. Source 4. Gate
5. Drain 6. Drain 7. Drain 8. Drain
DFN3030 Plastic Package

Key Parameters

Parameter	Value	Unit
$-BV_{DS}$	30	V
$R_{DS(ON)}$ Max	12 @ $-V_{GS} = 10V$	$m\Omega$
	16 @ $-V_{GS} = 4.5V$	
$-V_{GS(th)}$ typ	1.5	V
Qg typ	58 @ $V_{GS} = 10 V$	nC

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	± 25	V
Drain Current Continuous ¹⁾	$-I_D$	$T_c = 25^\circ C$ 24	A
		$T_c = 100^\circ C$ 20	
Peak Drain Current, Pulsed ²⁾	$-I_{DM}$	66	A
Single-Pulse Avalanche Current ²⁾	I_{AS}	25	A
Single-Pulse Avalanche Energy ²⁾ (L = 0.1 mH)	E_{AS}	31	mJ
Power Dissipation ³⁾	P_D	$T_c = 25^\circ C$ 24	W
		$T_c = 100^\circ C$ 9.6	
Thermal Resistance Junction to Case	$R_{\theta JC}$	5.2	$^\circ C/W$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	30 ⁴⁾ 60 ^{4) 5)}	$^\circ C/W$
Operating Junction Temperature Range	T_j	- 55 to + 150	$^\circ C$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ C$

¹⁾ The maximum current rating is package limited.

²⁾ Single pulse width limited by junction temperature $T_{j(MAX)} = 150^\circ C$.

³⁾ The power dissipation P_D is based on $T_{j(MAX)} = 150^\circ C$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

⁴⁾ The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_a = 25^\circ C$. The Power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10 s$ and the maximum allowed junction temperature of $150^\circ C$. The value in any given application depends on the user's specific board design.

⁵⁾ The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250\ \mu\text{A}$	$-BV_{DS}$	30	-	-	V
Drain-Source Leakage Current at $-V_{DS} = 30\ \text{V}$	$-I_{DSS}$	-	-	1	μA
Gate-Source Leakage Current at $V_{GS} = \pm 25\ \text{V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $-V_{DS} = V_{GS}$, $-I_D = 250\ \mu\text{A}$	$-V_{GS(th)}$	1.3	-	2.3	V
Drain-Source On-State Resistance at $-V_{GS} = 10\ \text{V}$, $-I_D = 12\ \text{A}$ at $-V_{GS} = 4.5\ \text{V}$, $-I_D = 10\ \text{A}$	$R_{DS(on)}$	- -	9 12	12 16	m Ω
DYNAMIC PARAMETERS					
Forward transfer admittance at $-V_{DS} = 5\ \text{V}$, $-I_D = 12\ \text{A}$	g_{fs}	-	25	-	S
Gate Resistance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	R_g	-	4.3	-	Ω
Input Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	3713	-	pF
Output Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	398	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	349	-	pF
Total Gate Charge at $-V_{GS} = 10\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $-I_D = 12\ \text{A}$ at $-V_{GS} = 4.5\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $-I_D = 12\ \text{A}$	Q_g	- -	58 28	- -	nC
Gate-Source Charge at $-V_{GS} = 10\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $-I_D = 12\ \text{A}$	Q_{gs}	-	9.3	-	nC
Gate-Drain Charge at $-V_{GS} = 10\ \text{V}$, $-V_{DS} = 15\ \text{V}$, $-I_D = 12\ \text{A}$	Q_{gd}	-	9.6	-	nC
Turn-On Delay Time at $-V_{DS} = 15\ \text{V}$, $-V_{GEN} = 10\ \text{V}$, $-I_D = 20\ \text{A}$, $R_L = 0.75\ \Omega$, $R_G = 4.5\ \Omega$	$t_{d(on)}$	-	56	-	ns
Turn-On Rise Time at $-V_{DS} = 15\ \text{V}$, $-V_{GEN} = 10\ \text{V}$, $-I_D = 20\ \text{A}$, $R_L = 0.75\ \Omega$, $R_G = 4.5\ \Omega$	t_r	-	97	-	ns
Turn-Off Delay Time at $-V_{DS} = 15\ \text{V}$, $-V_{GEN} = 10\ \text{V}$, $-I_D = 20\ \text{A}$, $R_L = 0.75\ \Omega$, $R_G = 4.5\ \Omega$	t_{off}	-	383	-	ns
Turn-Off Fall Time at $-V_{DS} = 15\ \text{V}$, $-V_{GEN} = 10\ \text{V}$, $-I_D = 20\ \text{A}$, $R_L = 0.75\ \Omega$, $R_G = 4.5\ \Omega$	t_f	-	184	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $-I_S = 1\ \text{A}$, $V_{GS} = 0\ \text{V}$	$-V_{SD}$	-	-	1	V
Body-Diode Continuous Current	$-I_S$	-	-	24	A
Body-Diode Continuous Current, Pulsed	$-I_{SM}$	-	-	66	A
Body Diode Reverse Recovery Time at $-I_S = 20\ \text{A}$, $di_{SD}/dt = 100\ \text{A} / \mu\text{s}$	t_{rr}	-	27	-	ns
Body Diode Reverse Recovery Charge at $-I_S = 20\ \text{A}$, $di_{SD}/dt = 100\ \text{A} / \mu\text{s}$	Q_{rr}	-	13	-	nC

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristics

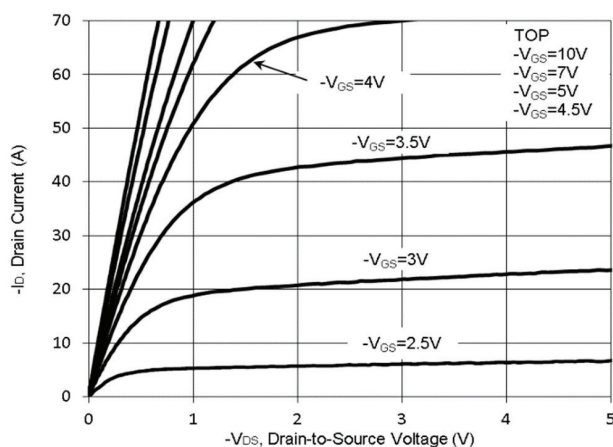


Fig. 2 Typical Transfer Characteristics

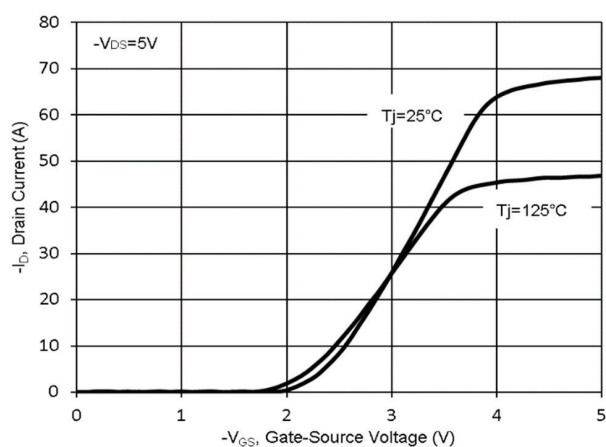


Fig. 3 on-Resistance vs. Gate to Source Voltage

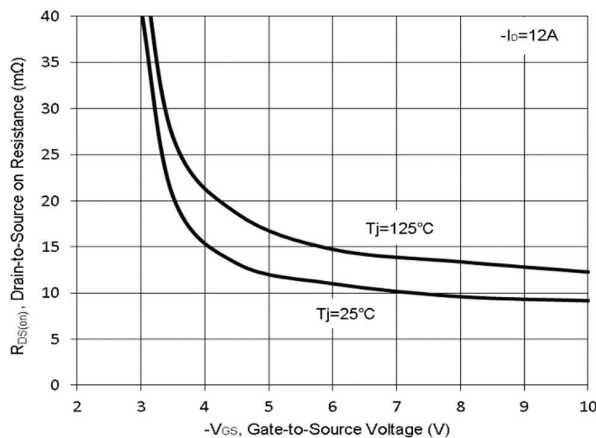


Fig. 4 on-Resistance vs. T_J

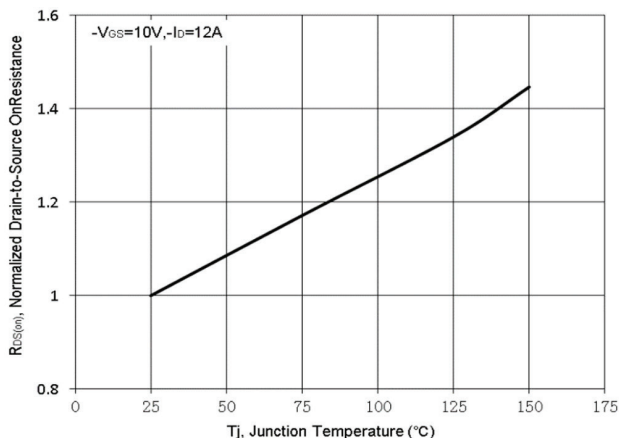


Fig. 5 Drain Source vs. on-Resistance

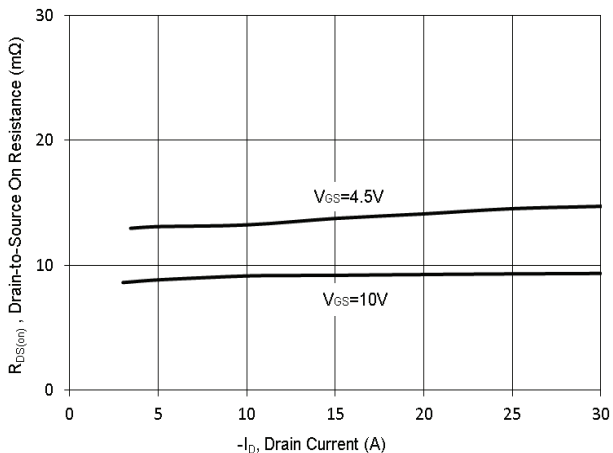
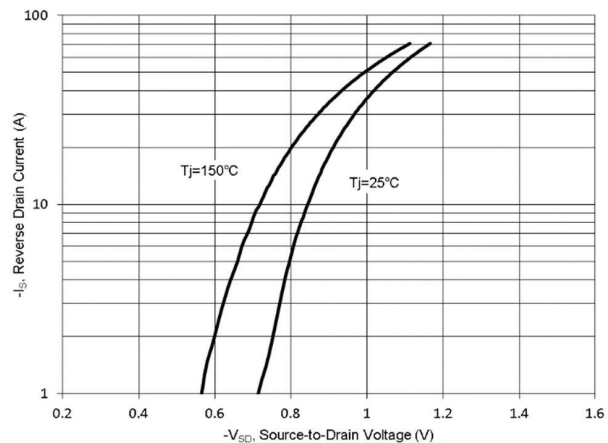


Fig. 6 Typical Body-Diode Forward Characteristics



Test Circuits

Fig.1-1 Switching times test circuit

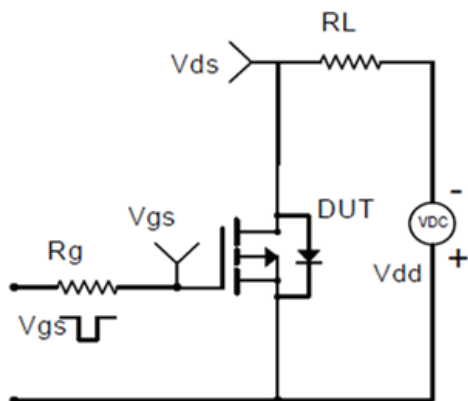


Fig.1-2 Switching Waveform

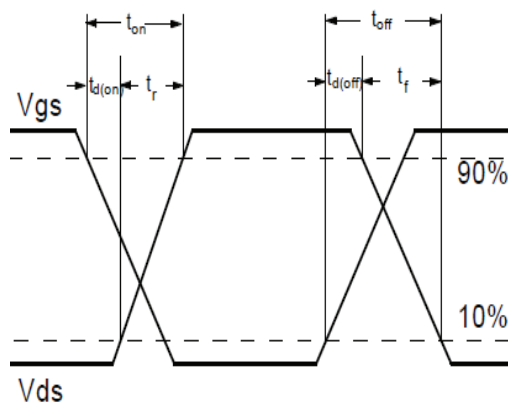


Fig.2-1 Gate charge test circuit

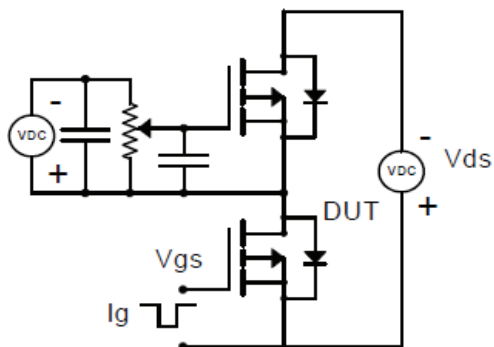


Fig.2-2 Gate charge waveform

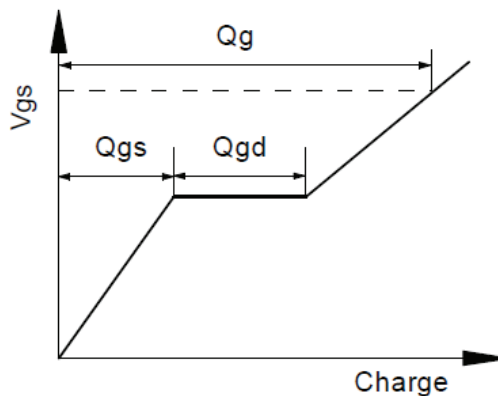


Fig.3-1 Avalanche test circuit

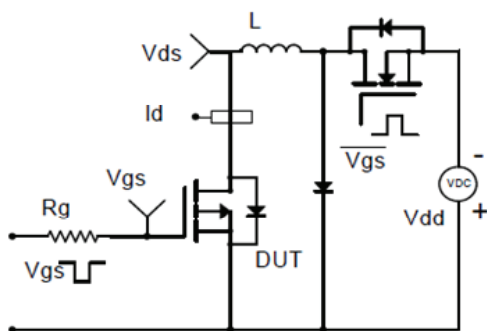
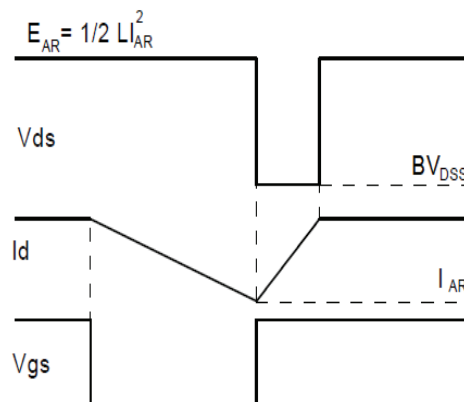
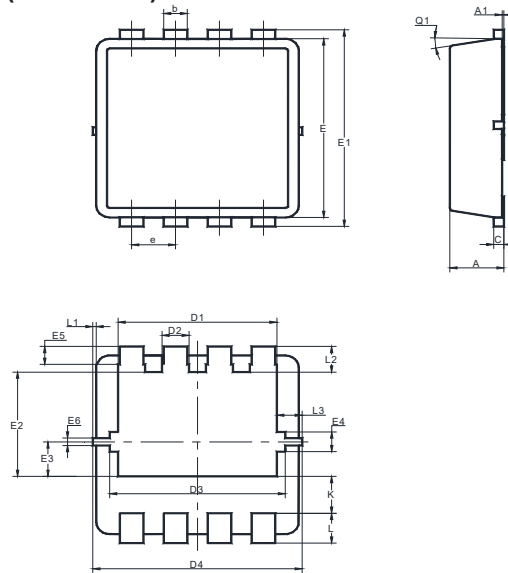


Fig.3-2 Avalanche waveform



Package Outline Dimensions (Units: mm)

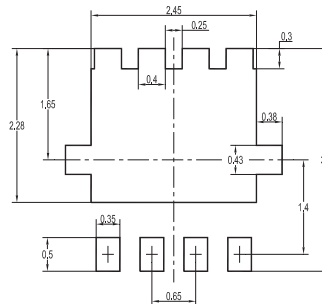
DFN3030



UNIT	A	A1	b	c	D1	D2	D3	D4	E	E1	E2	E3	E4
mm	0.9	0.05	0.35	0.25	2.6	0.5	2.7	3.2	3.1	3.3	1.85	0.68	0.43
	0.7	0	0.24	0.1	2.4	0.3	2.5	3	2.9	3.1	1.65	0.48	0.23

UNIT	E5	E6	e	K	L	L1	L2	L3	θ1
mm	0.4	0.25	0.7	0.72	0.5	0.1	0.53	0.475	12°
	0.2	0.15	0.6	0.52	0.3	0	0.33	0.275	0°

Recommended Soldering Footprint



Packing information

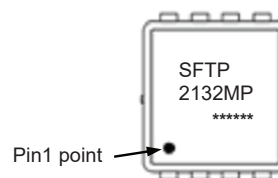
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN3030	12	8 ± 0.1	0.315 ± 0.004	330	13	5,000

Marking information

" SFTP2132MP " = Part No.

" ***** " = Date Code Marking

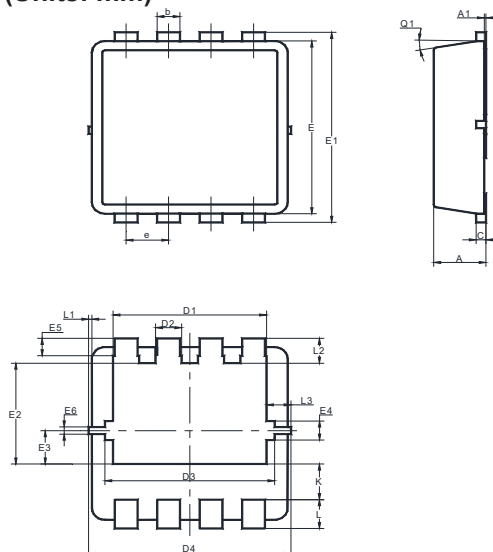
Font type: Arial



Disclaimer: Our company reserve the right to make modifications, enhancements, improvements, corrections or other changes to improve product design, functions and reliability, anytime without notice.

Package Outline Dimensions (Units: mm)

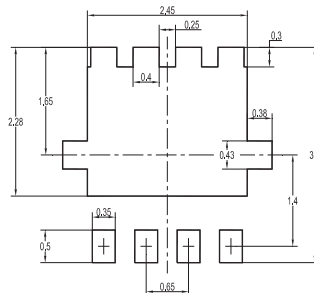
DFN3030



UNIT	A	A1	b	c	D1	D2	D3	D4	E	E1	E2	E3	E4
mm	0.9	0.05	0.35	0.25	2.6	0.5	2.7	3.2	3.1	3.3	1.85	0.68	0.43
	0.7	0	0.24	0.1	2.4	0.3	2.5	3	2.9	3.1	1.65	0.48	0.23

UNIT	E5	E6	e	K	L	L1	L2	L3	θ1
mm	0.4	0.25	0.7	0.72	0.5	0.1	0.53	0.475	12°
	0.2	0.15	0.6	0.52	0.3	0	0.33	0.275	0°

Recommended Soldering Footprint



Packing information

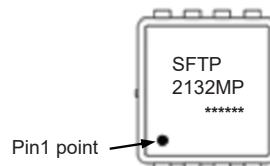
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN3030	12	8 ± 0.1	0.315 ± 0.004	330	13	5,000

Marking information

" SFTP2132MP " = Part No.

" ***** " = Date Code Marking

Font type: Arial



Disclaimer: Our company reserve the right to make modifications, enhancements, improvements, corrections or other changes to improve product design, functions and reliability, anytime without notice.