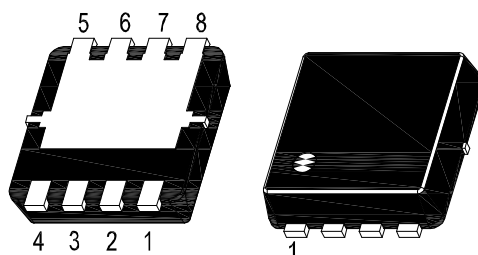
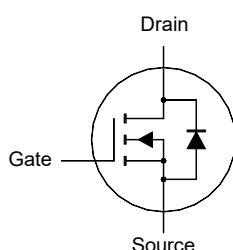


SFTN4016MP-AH

N-Channel Enhancement Mode MOSFET

Features

- AEC-Q101 Qualified
- Surface-mounted package
- Halogen and Antimony Free(HAF), RoHS compliant



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_{DSS}	40	V
$R_{DS(ON)}$ Max	6.5 @ $V_{GS} = 10\text{ V}$	$m\Omega$
	9 @ $V_{GS} = 4.5\text{ V}$	
$V_{GS(th)}$ typ	1.4	V
Q_g typ	59 @ $V_{GS} = 10\text{ V}$	nC

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current - Continuous	I_D	40	A
		31	
Peak Drain Current, Pulsed ¹⁾	I_{DM}	140	A
Single-Pulse Avalanche Current	I_{AS}	32.9	A
Single-Pulse Avalanche Energy ²⁾	E_{AS}	54.1	mJ
Power Dissipation	P_D	36.7	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

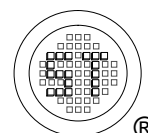
Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.4	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ³⁾	$R_{\theta JA}$	75	$^\circ\text{C/W}$

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

²⁾ Limited by $T_{J(MAX)}$, starting $T_J = 25^\circ\text{C}$, $L = 0.1\text{ mH}$, $R_g = 25\text{ }\Omega$, $I_D = 32.9\text{ A}$, $V_{GS} = 10\text{ V}$.

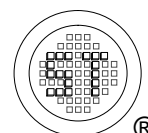
³⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.



SFTN4016MP-AH

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}	40	-	-	V
Drain-Source Leakage Current at $V_{DS} = 32\ \text{V}$	I_{DSS}	-	-	1	μA
Gate-Source 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	-	2.5	V
Drain-Source On-State Resistance at $V_{GS} = 10\ \text{V}$, $I_D = 10\ \text{A}$ at $V_{GS} = 4.5\ \text{V}$, $I_D = 5\ \text{A}$	$R_{DS(on)}$	- -	- -	6.5 9	m Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $V_{DS} = 5\ \text{V}$, $I_D = 5\ \text{A}$	g_{FS}	-	27	-	S
Gate Resistance at $V_{DS} = 0\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	R_g	-	0.4	-	Ω
Input Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	2354	-	pF
Output Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	215	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 15\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	175	-	pF
Gate Charge Total at $V_{DS} = 20\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 10\ \text{A}$ at $V_{DS} = 20\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 10\ \text{A}$	Q_g	- -	59 29	- -	nC
Gate to Source Charge at $V_{DS} = 20\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 10\ \text{A}$	Q_{gs}	-	7.6	-	nC
Gate to Drain Charge at $V_{DS} = 20\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 10\ \text{A}$	Q_{gd}	-	10.2	-	nC
Turn-On Delay Time at $V_{GS} = 10\ \text{V}$, $V_{DS} = 15\ \text{V}$, $I_D = 1\ \text{A}$, $R_G = 3.3\ \Omega$	$t_{d(on)}$	-	15.2	-	ns
Turn-On Rise Time at $V_{GS} = 10\ \text{V}$, $V_{DS} = 15\ \text{V}$, $I_D = 1\ \text{A}$, $R_G = 3.3\ \Omega$	t_r	-	8.8	-	ns
Turn-Off Delay Time at $V_{GS} = 10\ \text{V}$, $V_{DS} = 15\ \text{V}$, $I_D = 1\ \text{A}$, $R_G = 3.3\ \Omega$	$t_{d(off)}$	-	74	-	ns
Turn-Off Fall Time at $V_{GS} = 10\ \text{V}$, $V_{DS} = 15\ \text{V}$, $I_D = 1\ \text{A}$, $R_G = 3.3\ \Omega$	t_f	-	7	-	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	-	-	40	A
Body-Diode Continuous Current, Pulsed	I_{SM}	-	-	140	A



Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

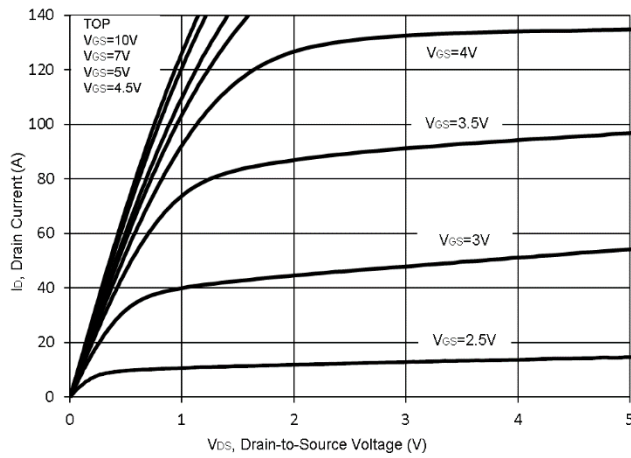


Fig. 2 Typical Transfer Characteristic

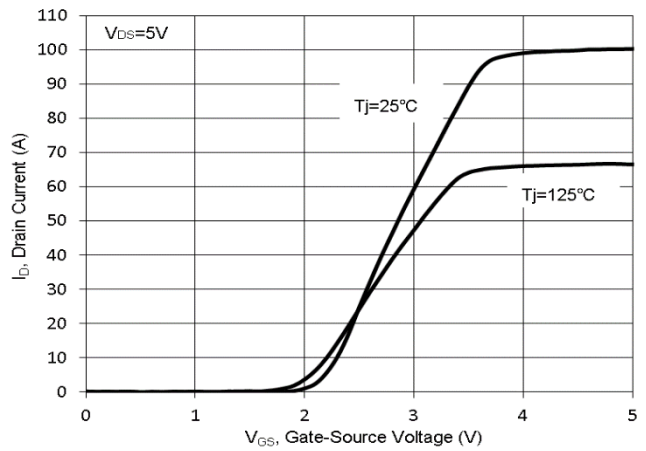


Fig. 3 on-Resistance vs. Gate Voltage

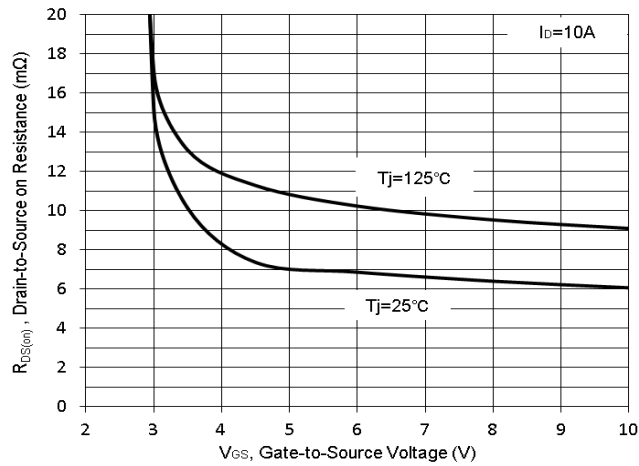


Fig. 4 on-Resistance vs. T_J

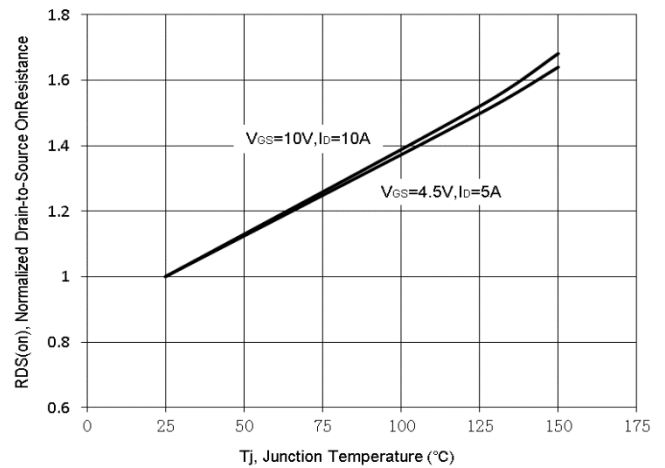


Fig. 5 Drain Source vs. on-Resistance

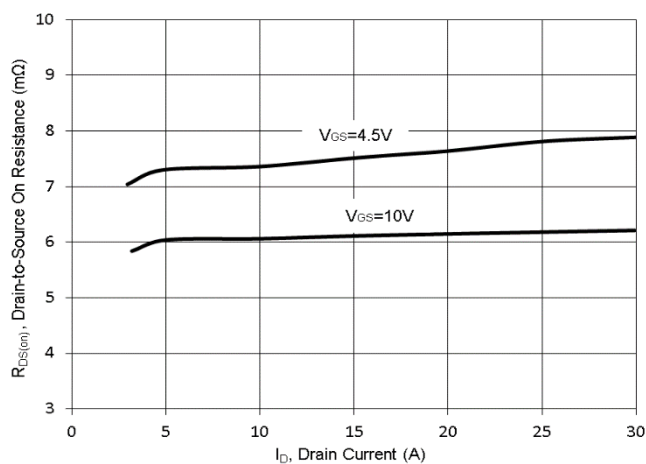
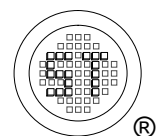
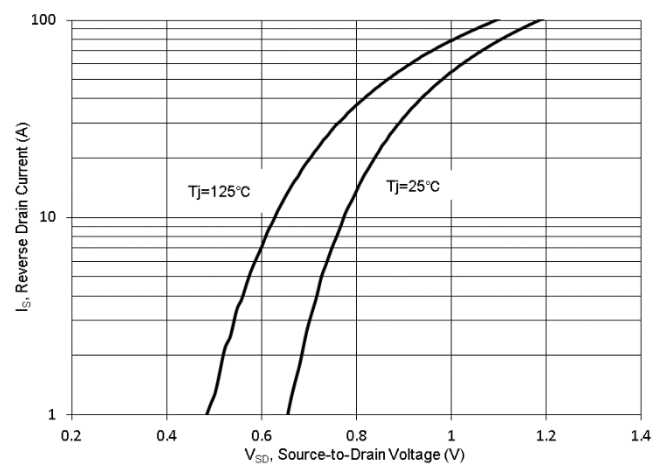


Fig. 6 Typical Body-Diode Forward Characteristic



Electrical Characteristics Curves

Fig. 7 $V_{(BR)DSS}$ vs. Junction Temperature

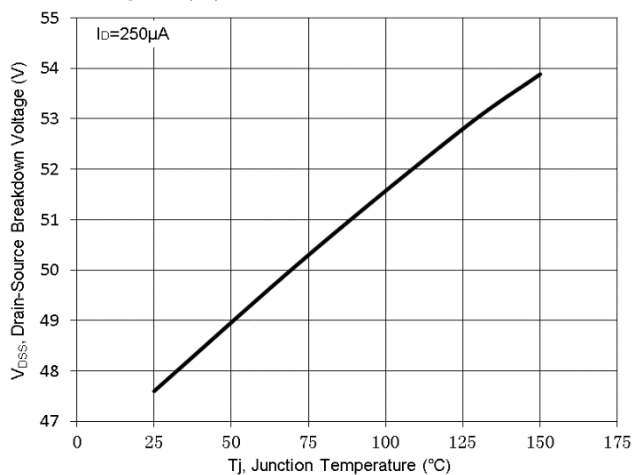


Fig. 8 Gate Threshold Variation vs. T_J

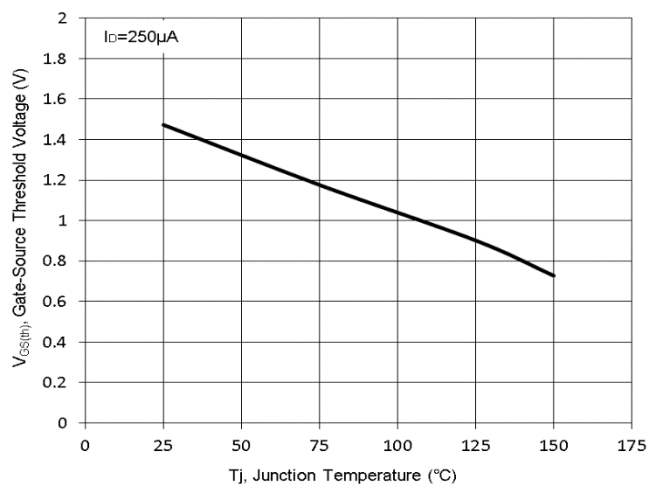


Fig. 9 Typical Junction Capacitance

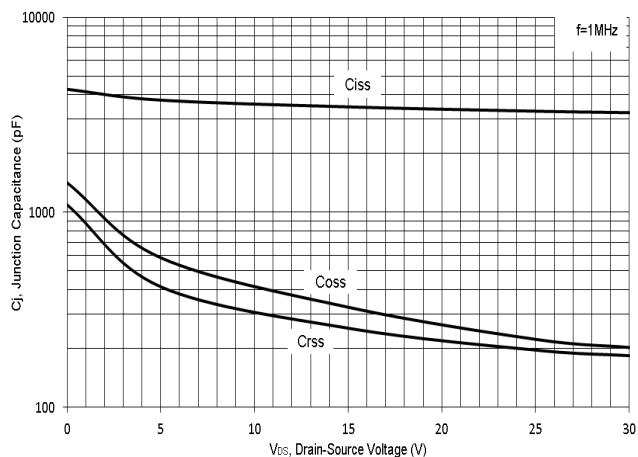


Fig. 10 Gate Charge

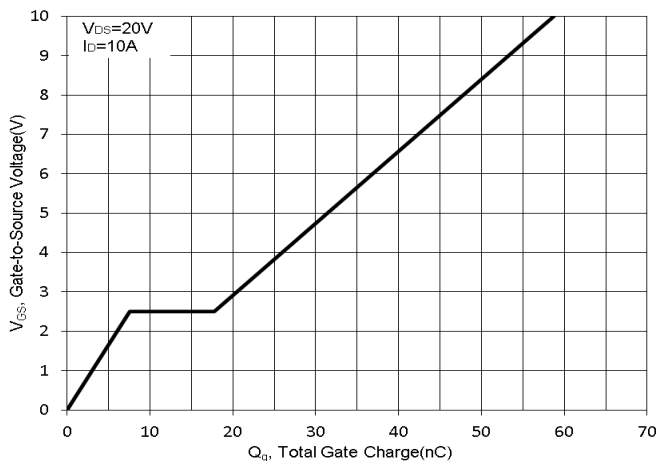


Fig. 11 Drain-Source Leakage Current

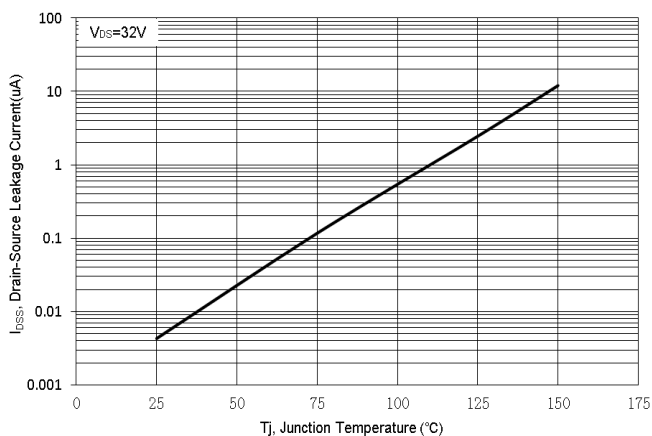
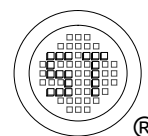
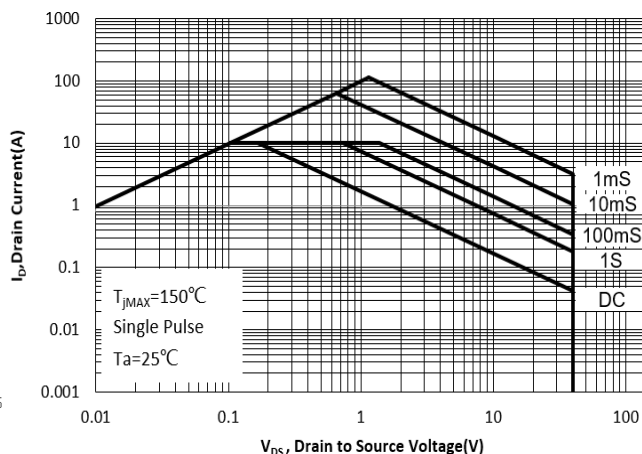


Fig. 12 Safe Operation Area



Test Circuits

Fig.1-1 Switching times test circuit

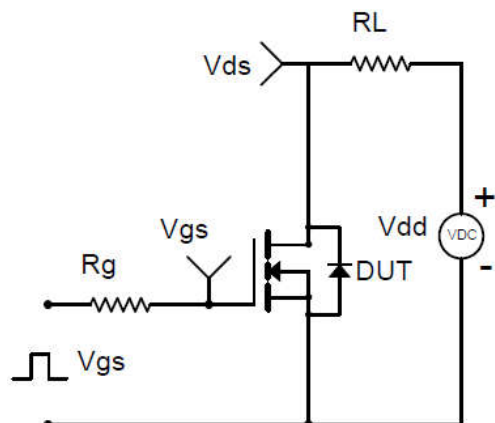


Fig.1-2 Switching Waveform

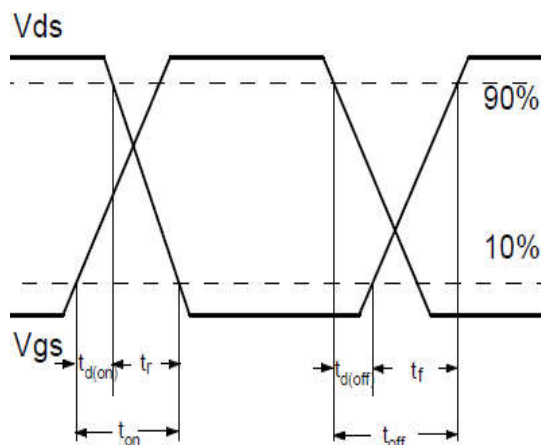


Fig.2-1 Gate charge test circuit

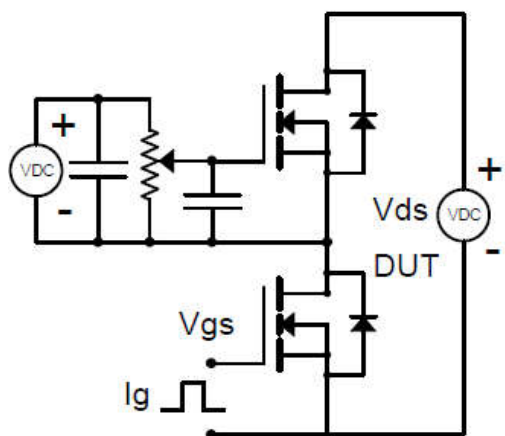


Fig.2-2 Gate charge waveform

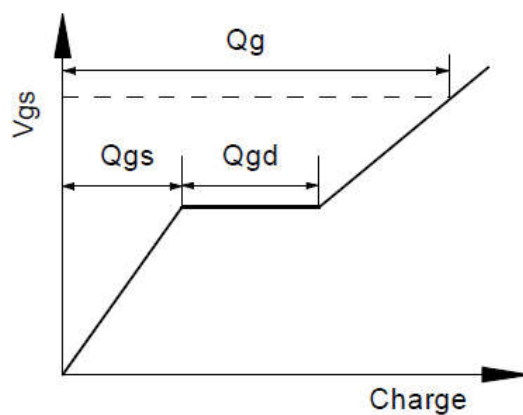


Fig.3-1 Avalanche test circuit

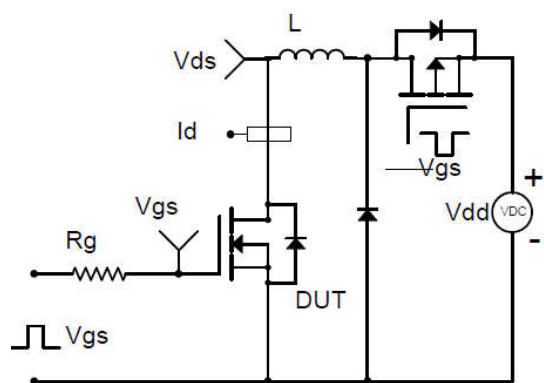
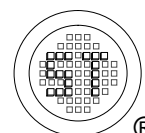
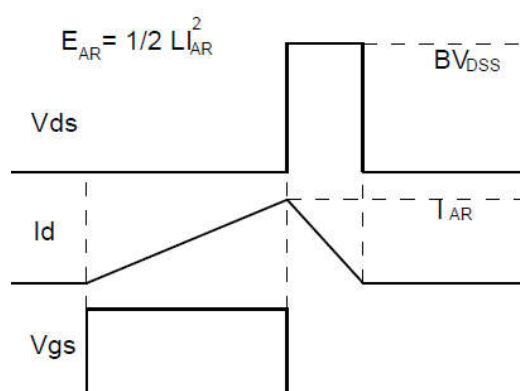


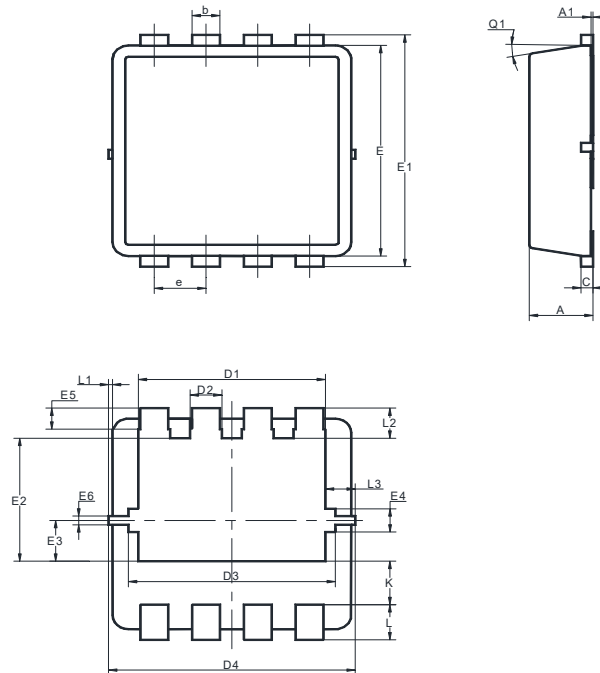
Fig.3-2 Avalanche waveform



SFTN4016MP-AH

Package Outline Dimensions (Units: mm)

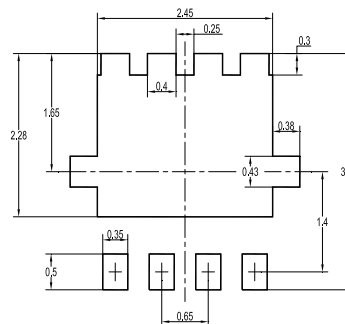
DFN3030



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

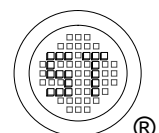
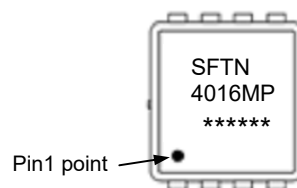
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN3030	12	8 ± 0.1	0.315 ± 0.004	330	13	5,000

Marking information

" SFTN4016MP " = Part No.

" ***** " = Date Code Marking

Font type: Arial



IMPORTANT NOTICE

Our company and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes to improve product design, functions and reliability without further notice to this document and any product described herein.

Statements described herein regarding the reliability and suitability of products is for illustrative purposes only. Products specifically described herein are not authorized for use as critical components in life support devices, automobile, military, aviation or aerospace only with the written approval of our company.

The information contained herein is presented only as guidance for product use. No license to any intellectual property rights is granted under this document. No responsibility is assumed by our company for any infringement of patents or any other intellectual property rights of third party that may result from the use of the product.

