

Features

- Low on resistance
- Low gate charge
- Fast switching
- High avalanche current
- Low reverse transfer capacitances

Application

- Brushed and BLDC Motor drive systems
- Battery Management
- DC/DC and AC/DC Converter
- UPS

Product Summary

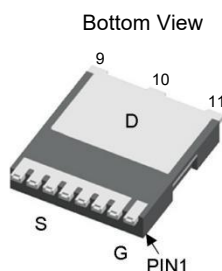
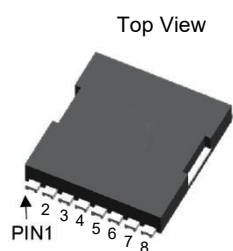
V_{DS}	80V
$R_{DS(on)typ.}$	1.3mΩ
$I_D(Silicon\ Limited)$	360A

100% DVDS Tested

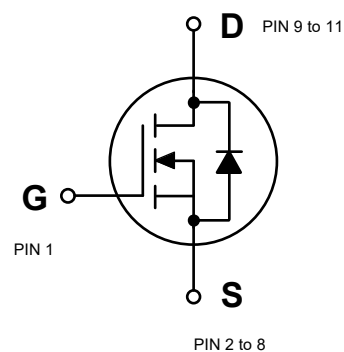
100% Avalanche Tested



TOLL



SFT016N80C3



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SFT016N80C3	016N80C3	TOLL	Reel & Tape	330*28.5mm	24mm	2000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	80	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$T_C = 25^{\circ}C(Silicon\ Limited)$	360	A
	$T_C = 100^{\circ}C(Silicon\ Limited)$	230	
Pulsed Drain Current($T_C=25^{\circ}C, t_p$ limited by T_{Jmax})	$I_{D,Pulse}$	1080	A
Single Pulsed Avalanche Energy($L=0.5mH, R_G=25\Omega, T_J=25^{\circ}C$)	E_{AS}	2704	mJ
Power Dissipation	$T_C = 25^{\circ}C$	312.5	W
Junction Temperature	T_J	-55 ~ 150	°C
Storage Temperature	T_{STG}	-55 ~ 150	°C

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance , junction – case	R_{thJC}	0.4	°C/W
Thermal resistance , junction – ambient(min. footprint)	R_{thJA}	62.5	°C/W

Electrical Characteristics ($T_J = 25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
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Static Characteristics

Drain - Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	80	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80V, V_{GS} = 0V$ $T_C = 25^{\circ}\text{C}$ $T_C = 125^{\circ}\text{C}$	- - -	- - -	1 100	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$	-	1.3	1.6	mΩ
Transconductance	g_{fs}	$V_{DS} = 5V, I_D = 50A$	-	225	-	S

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{DS} = 40V, V_{GS} = 0V, f = 1\text{MHz}$	-	14256	-	pF
Output Capacitance	C_{oss}		-	2142	-	
Reverse Transfer Capacitance	C_{rss}		-	58	-	
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$	-	1.9	-	Ω

Switching Characteristics

Total Gate Charge	Q_g	$V_{DS} = 40V, V_{GS} = 10V, I_D = 50A$	-	208	-	nC
Gate-source Charge	Q_{gs}		-	52	-	
Gate-drain Charge	Q_{gd}		-	37	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 40V, V_{GS} = 10V, I_D = 50A,$ $R_G = 3\Omega$	-	53	-	ns
Turn-on Rise Time	t_r		-	125	-	
Turn-off Delay Time	$t_{d(off)}$		-	119	-	
Turn-off Fall Time	t_f		-	148	-	

Body Diode Characteristic

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Diode continuous forward current	I_S	-	-	-	270	A
Diode pulse current	$I_{S,pulse}$	Pulsed, $t_p \leq 10\mu s$	-	-	1080	A
Body Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_{SD} = 20A$	-	-	1.2	V
Body Diode Reverse Recovery Time	T_{rr}	$I_F = 50A, di/dt = 100A/\mu s$	-	116	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 50A, di/dt = 100A/\mu s$	-	225	-	nC

Typical Performance Characteristics

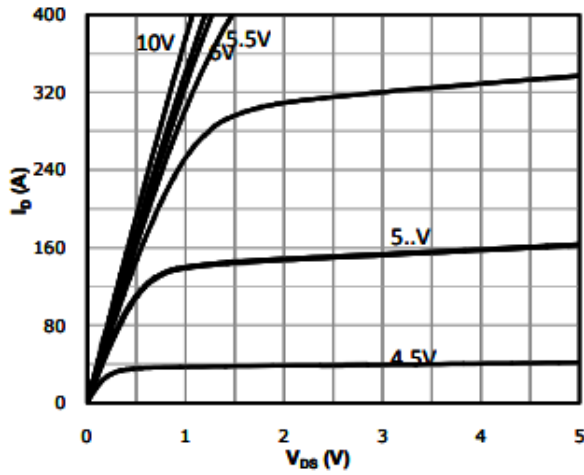
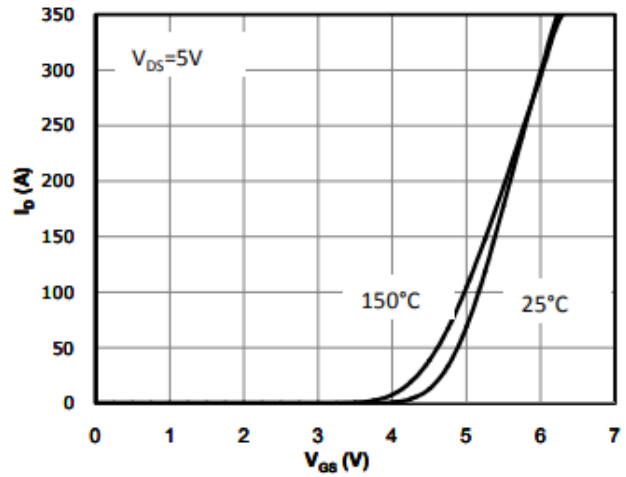
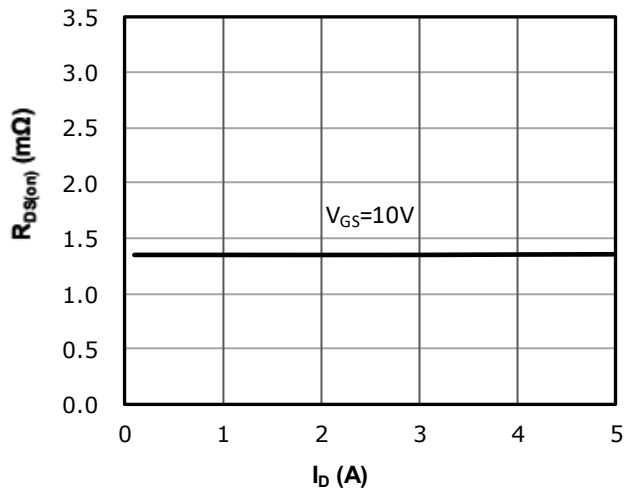
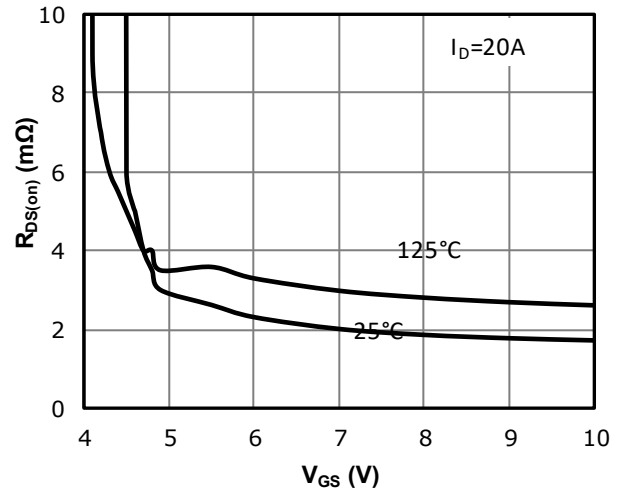
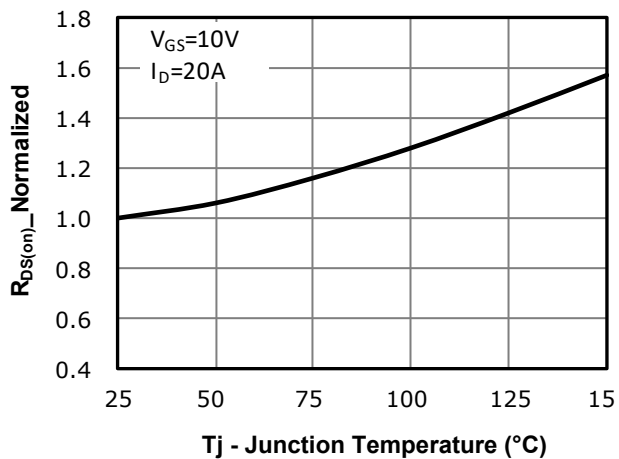
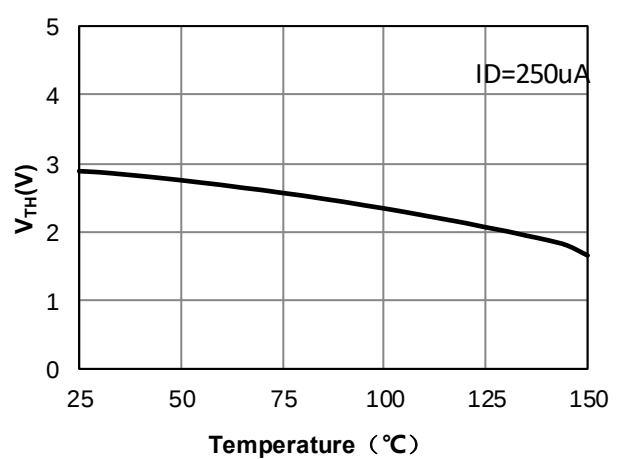
Fig 1: Output Characteristics

Fig 2: Transfer Characteristics

Fig 3: Rds(on) Vs Ids Characteristics (Tc=25°C)

Fig 4: Rds(on) vs Gate Voltage

Fig 5: Rds(on) vs. Temperature

Fig 6: VGS(TH) Vs Tj Temperature


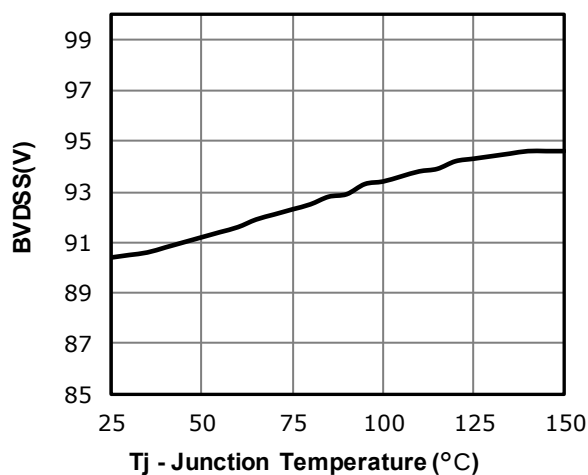
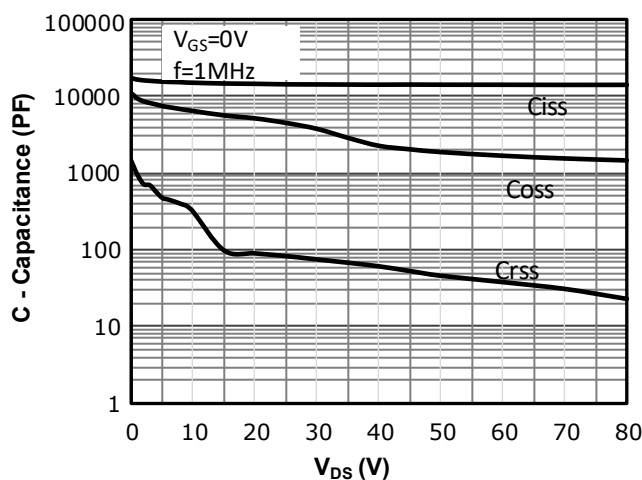
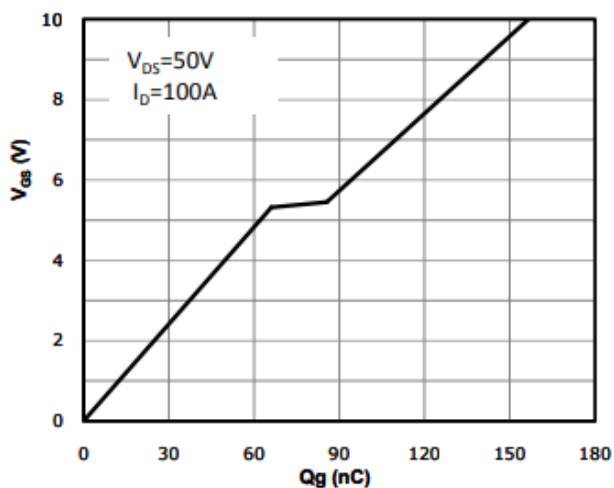
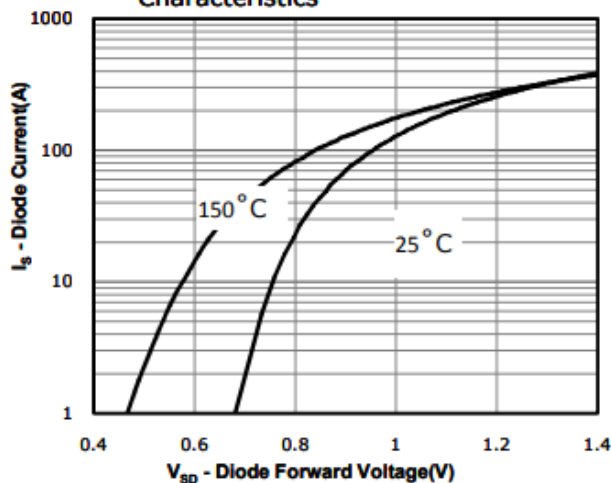
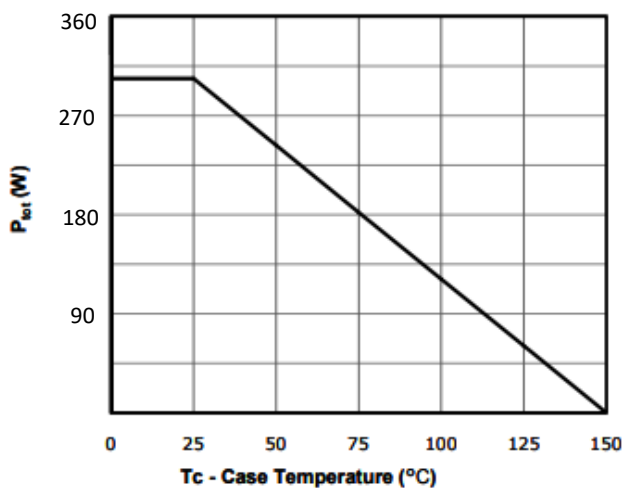
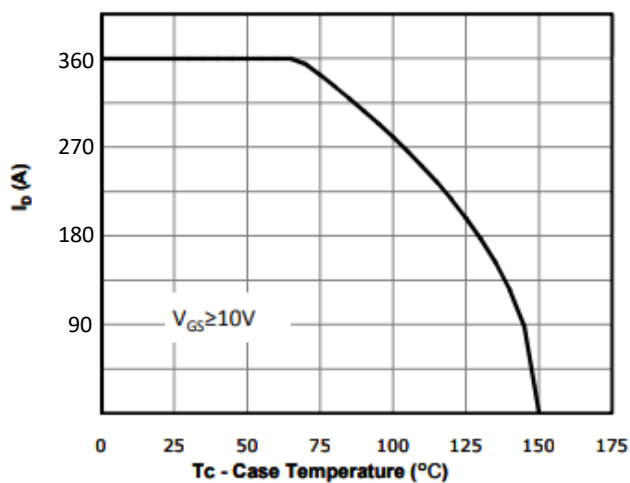
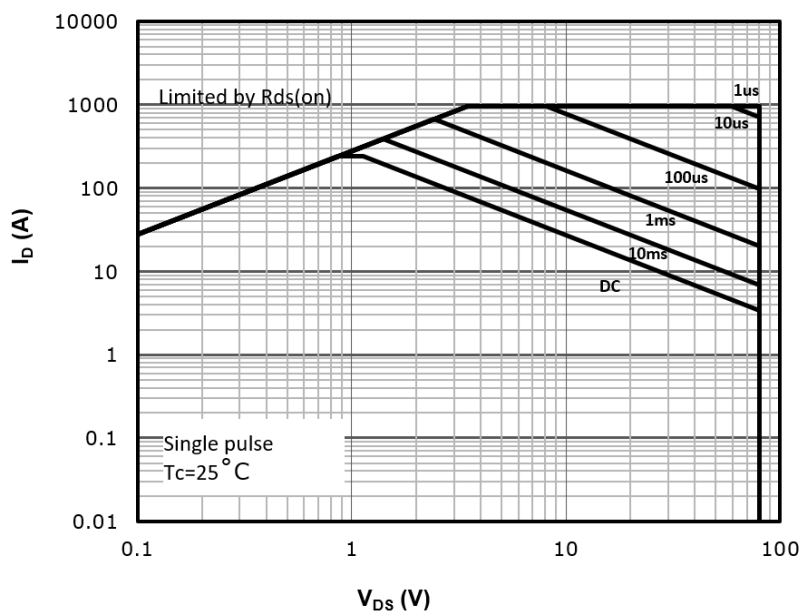
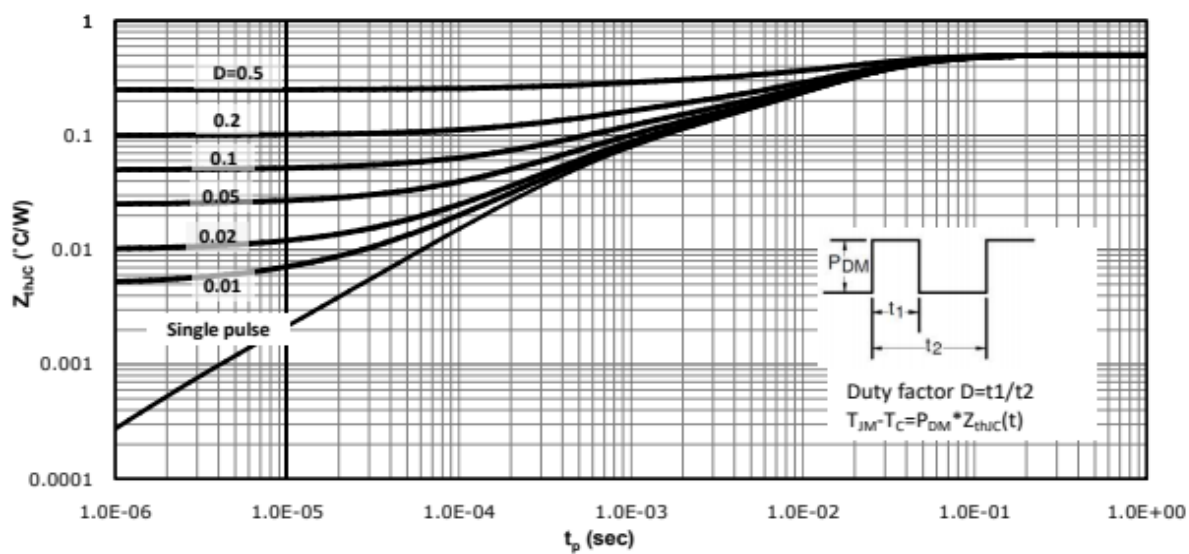
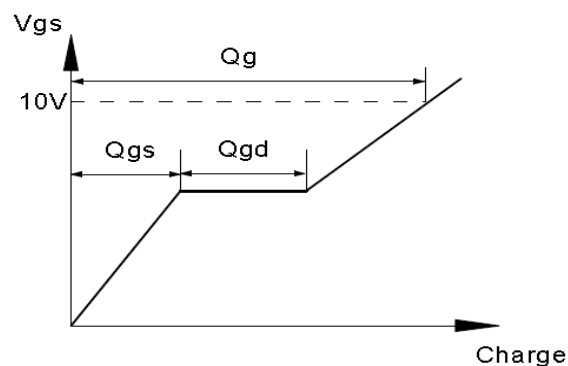
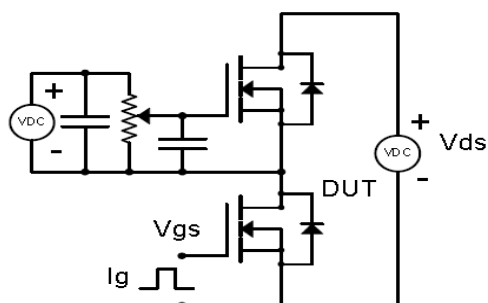
Fig 7: BVDSS vs. Temperature

Fig 8: Capacitance Characteristics

Fig 9: Gate Charge Characteristics

Fig 10: Body-diode Forward Characteristics

Fig 11: Power Dissipation

Fig 12: Drain Current Derating


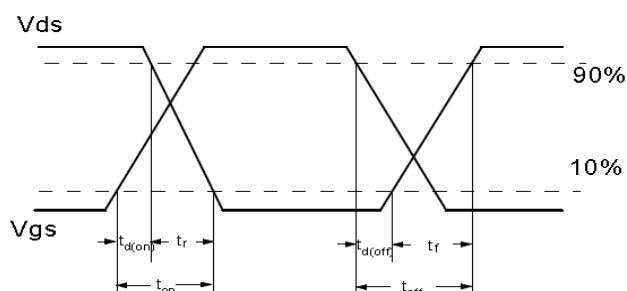
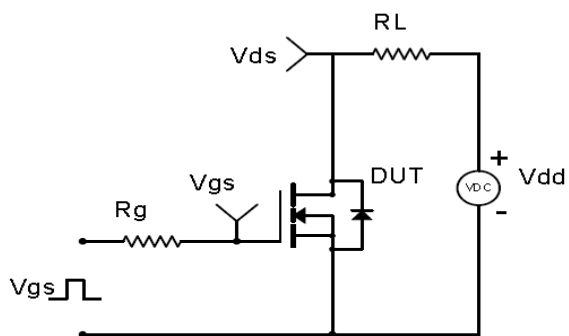
Fig 13: Safe Operating Area

Fig 14: Max. Transient Thermal impedance


Test Circuit & Waveform

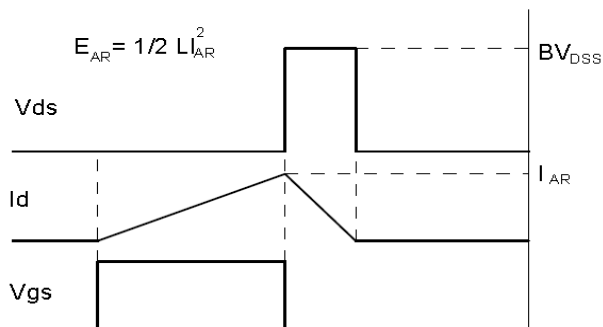
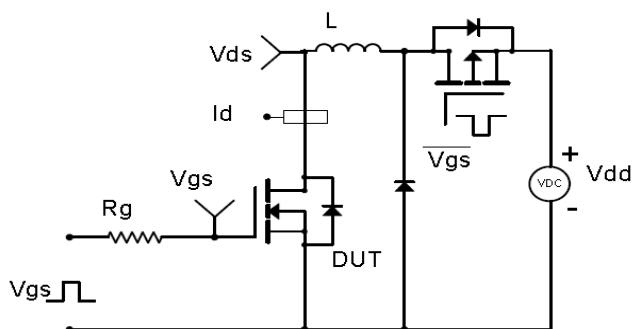
Gate Charge Test Circuit & Waveform



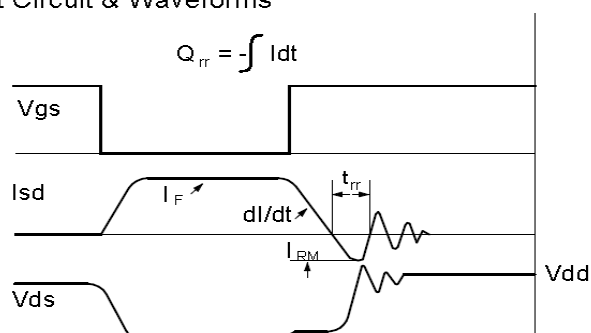
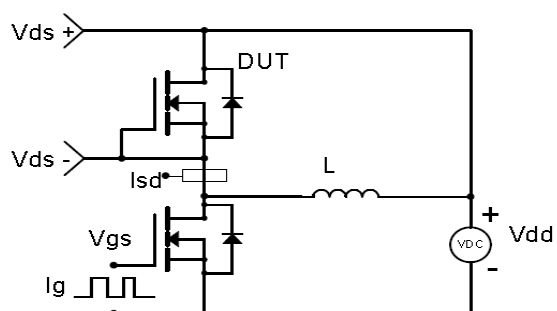
Resistive Switching Test Circuit & Waveforms

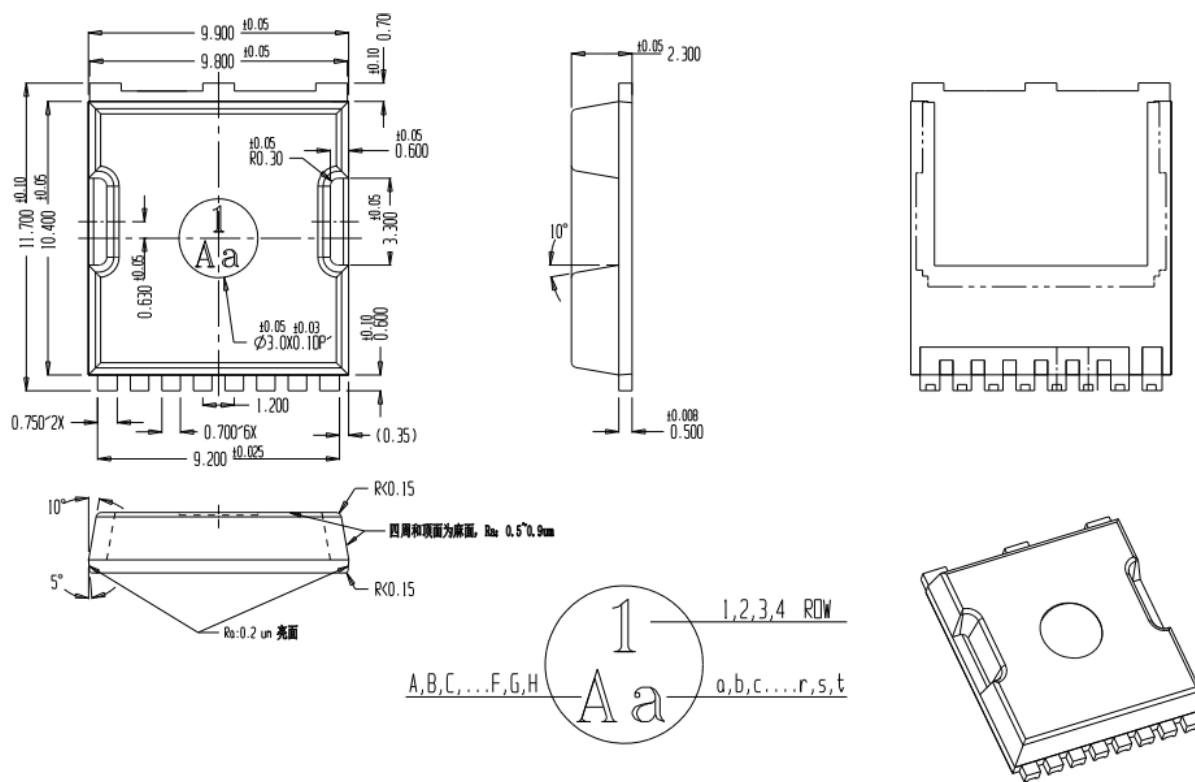


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TOLL


Revision History

Revision	Date	Major Changes
1.0	2023-6-18	Release of formal version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qualified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

Scilicon Electric reserves the right to improve product design,function and reliability without notice.