SCILICON ELECTRIC

SFE018N40C3

N-MOSFET TOLL 40V, 160A, 1.5mΩ

N-Channel Super Trench Power MOSFET

BV_{DSS}	40		V
I_D@V_{GS}=10V,T_C=25°C	160		A
R_{DSON} ,T_C=25°C	Typ	Max	Unit
@V_{GS}=10V,I_D=30A	1.5	1.8	mΩ
@V_{GS}=4.5V,I_D=20A	2.0	2.6	

100% ΔVds TESTED!

100% UIS TESTED!

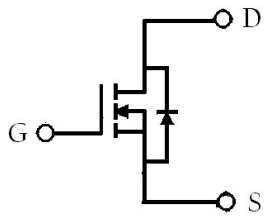
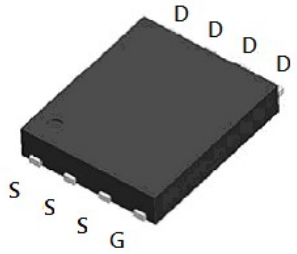
Features

- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Description

The 018N40C3 is the high cell density trenched

N-ch MOSFETs, which provide excellent R_{DSON} and gate charge for most of the synchronous

Equivalent Circuit	Outline
	**DFN5*6** 

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
SFE018N40C3	018N40C3	PDFN5*6	-	-	2500

Table 1. Thermal Characteristic

Symbol	Parameter	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	1	℃/W

Table 2. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (VGS=0V)	40	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
$I_{D\ (DC)}$	Drain Current-Continuous(Tc =25℃) [1]	160	A
	Drain Current-Continuous(Tc =100℃) [1]	110	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed [2]	500	A
EAS	Single Pulse Avalanche Energy	430	mJ
P_D	Maximum Power Dissipation(Tc=25℃) [4]	125	W
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	40			V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=32V,V_{GS}=0V			1	μA
	Zero Gate Voltage Drain Current(Tc=55℃)	V_{DS}=32V,V_{GS}=0V			5	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.2	1.6	2.3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [2]	V_{GS}=10V, I_D=30A		1.5	1.8	mΩ
		V_{GS}=4.5V, I_D=20A		2.0	2.6	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V f=1.0MHz		3972		PF
C_{oss}	Output Capacitance			1119		PF
C_{rss}	Reverse Transfer Capacitance			82		PF
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V, V_{GS}=10V, I_D=20A, R_G =3.3Ω		18.5		nS
t_r	Turn-on Rise Time			9		nS
$t_{d(off)}$	Turn-Off Delay Time			58.5		nS
t_f	Turn-Off Fall Time			32		nS
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=20A		45		nC
Q_{gs}	Gate-Source Charge			12		nC
Q_{gd}	Gate-Drain Charge			18.5		nC

Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)				160	A
I_{SDM}	Pulsed Source-Drain Current(Body Diode)				500	A
V_{SD}	Forward On Voltage [2]	I_{SD}=1A,V_{GS}=0V,T_J= 25℃			1.2	V
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated				

Notes:

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

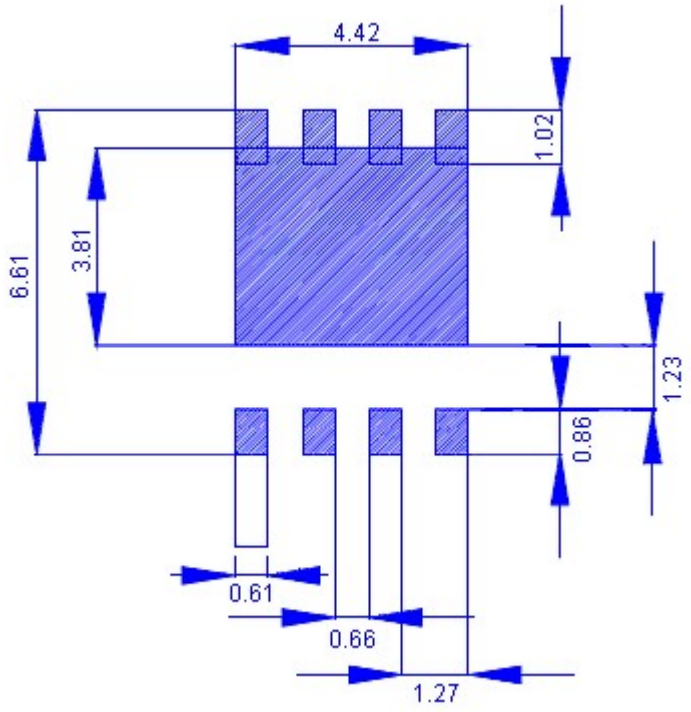
2.The data tested by pulsed , pulse width≦300us , duty cycle≦2%

3.The EAS data shows Max. rating . The test condition is V_{DD} =25V,V_{GS} =10V,L=0.5mH

4.The power dissipation is limited by 175℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Recommended soldering footprint



unit : mm

Typical Characteristics

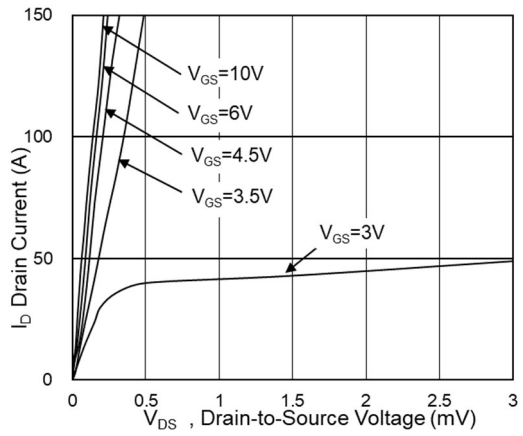


Fig.1 Typical Output Characteristics

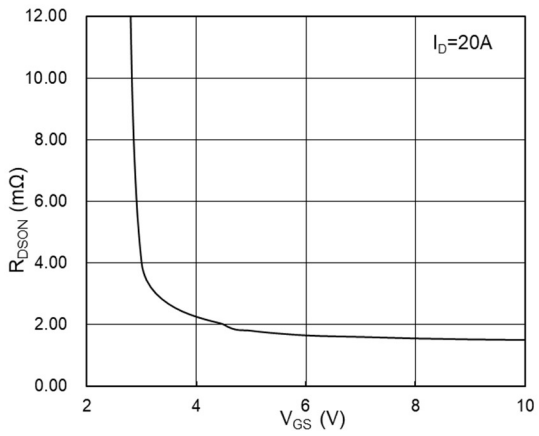


Fig.2 On-Resistance vs. G-S Voltage

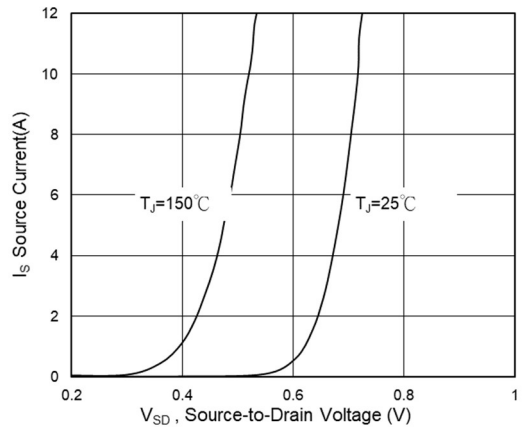


Fig.3 Forward Characteristics of Reverse Diode

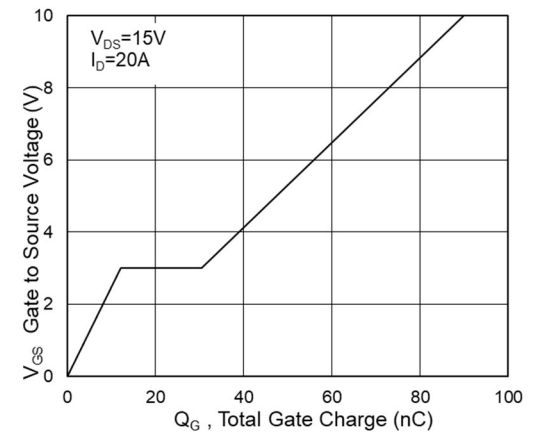


Fig.4 Gate-Charge Characteristics

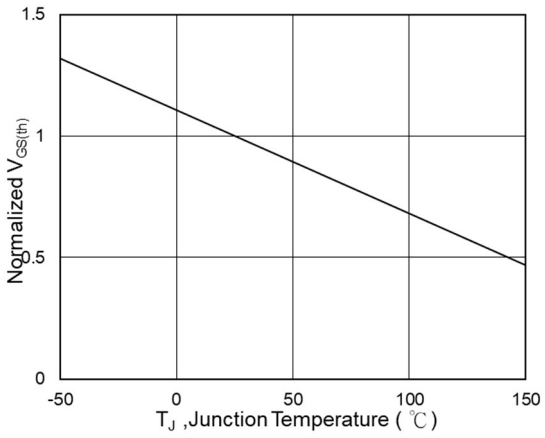


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

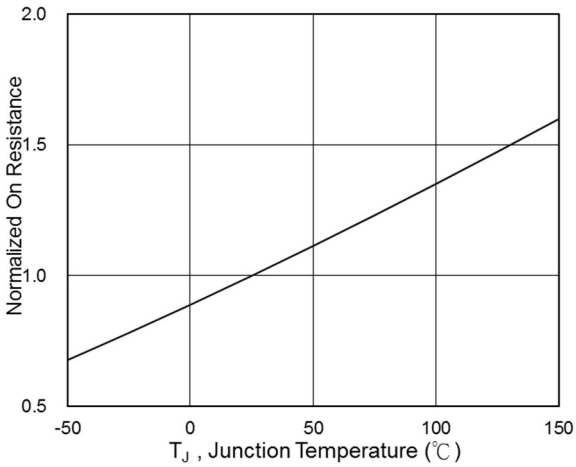


Fig.6 Normalized R_{DSON} vs. T_J

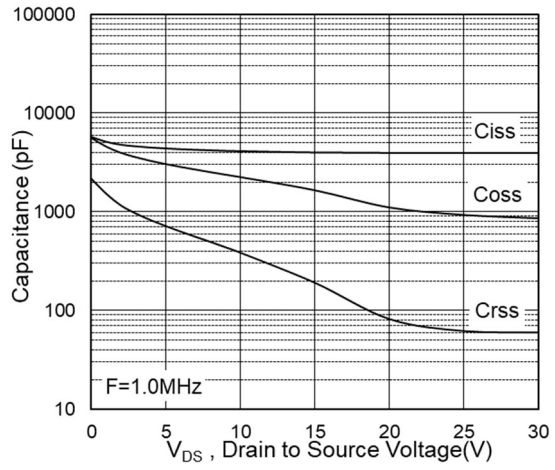


Fig.7 Capacitance

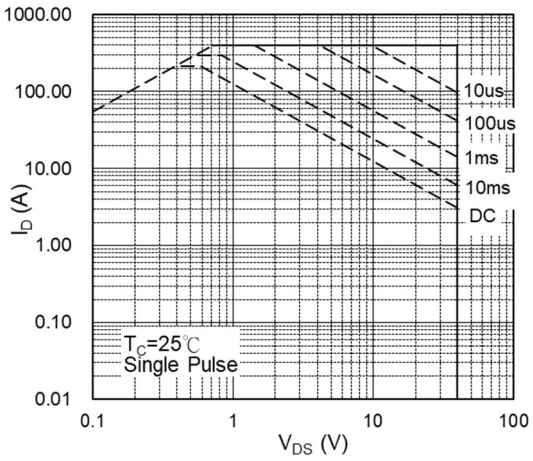


Fig.8 Safe Operating Area

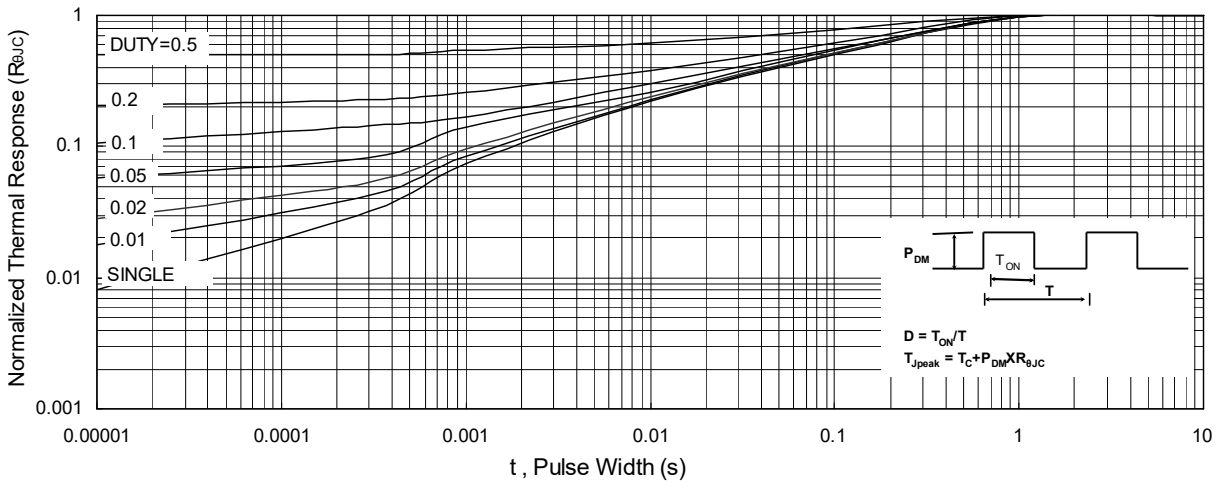


Fig.9 Normalized Maximum Transient Thermal Impedance

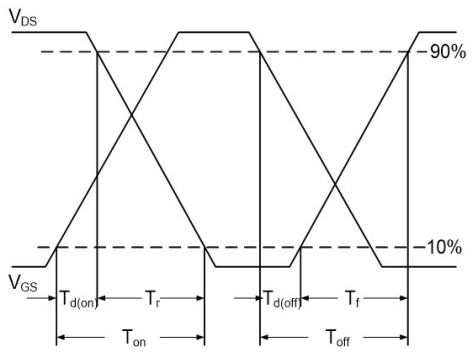


Fig.10 Switching Time Waveform

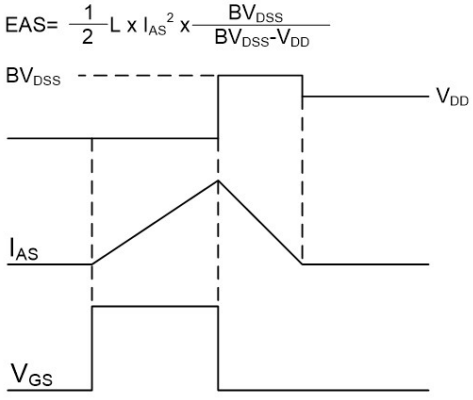
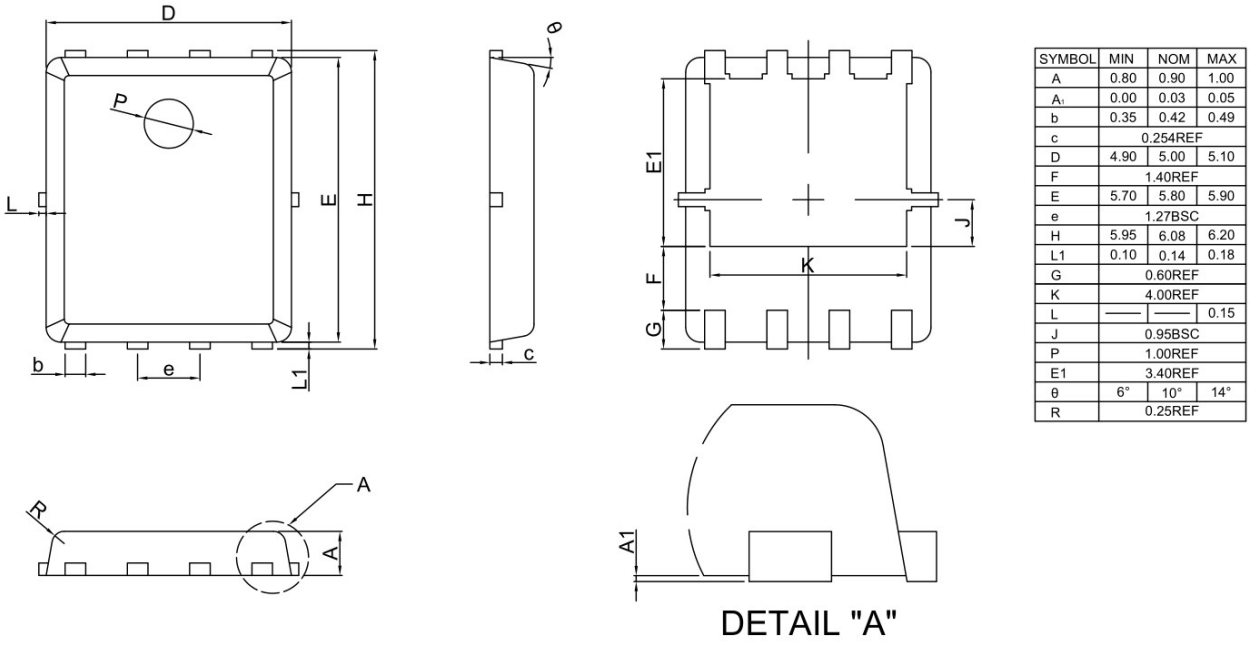


Fig.11UnclampedInductiveSwitchingWaveform

DFN5*6 Package Information



SYMBOL	MIN	NOM	MAX
A	0.80	0.90	1.00
A_1	0.00	0.03	0.05
b	0.35	0.42	0.49
c		0.254REF	
D	4.90	5.00	5.10
F		1.40REF	
E	5.70	5.80	5.90
e		1.27BSC	
H	5.95	6.08	6.20
L1	0.10	0.14	0.18
G		0.60REF	
K		4.00REF	
L	——	——	0.15
J		0.95BSC	
P		1.00REF	
E1		3.40REF	
θ	6°	10°	14°
R		0.25REF	