

## N-Channel Enhancement-Mode MOSFET (30V, 5.8A)

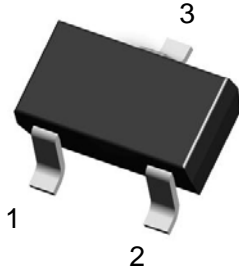
### PRODUCT SUMMARY

$V_{DSS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ ) Max
30V	5.8A	32 @ $V_{GS} = 10V, I_D = 5.8A$
		35 @ $V_{GS} = 4.5V, I_D = 5.0A$
		52 @ $V_{GS} = 2.5V, I_D = 4.0A$

### Features

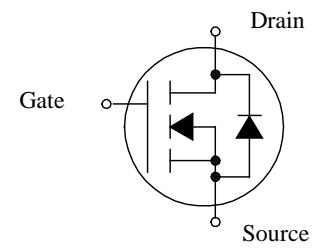
- Super high dense cell trench design for low  $R_{DS(on)}$
- Rugged and reliable
- SOT-23 package
- Ordering information:GN3400(Lead(Pb)-free and halogen-free)





**GN3400 Pin Assignment & Symbol**

3-Lead Plastic **SOT-23**  
Pin 1: Gate 2: Source 3: Drain



### Absolute Maximum Ratings ( $T_A=25^{\circ}C$ , unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current (Continuous)	5.8	A
$I_{DM}$	Drain Current (Pulsed) <sup>a</sup>	24	A
$I_S$	Drain-Source Diode Forward Current	2.5	A
$P_D$	Total Power Dissipation @ $T_A=25^{\circ}C$	1.25	W
$T_j, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to +150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient <sup>b</sup>	100	$^{\circ}C/W$

Note: a: Repetitive Rating; Pulse width limited by the maximum junction temperature.

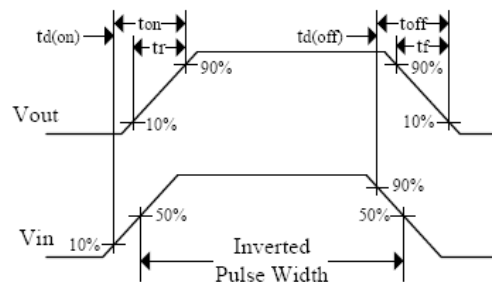
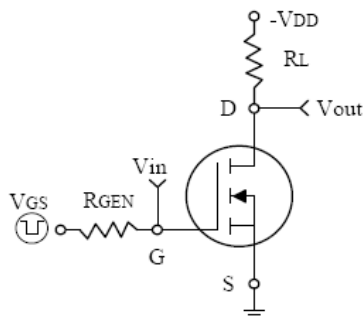
b: 1-in2 2oz Cu PCB board

## Electrical Characteristics (T<sub>A</sub>=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>• Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	-	-	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>• On Characteristics<sup>c</sup></b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.7	-	1.4	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =2.5V, I <sub>D</sub> =4.0A	-	46	52	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.0A	-	32	35	
		V <sub>GS</sub> =10V, I <sub>D</sub> =5.8A	-	28	32	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =5.0A	-	11	-	S
<b>• Dynamic Characteristics<sup>d</sup></b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	-	560	-	PF
C <sub>oss</sub>	Output Capacitance		-	58	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	47	-	
<b>• Switching Characteristics<sup>d</sup></b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =3A, V <sub>GS</sub> =10V	-	5	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	0.9	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	14	-	
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, R <sub>L</sub> =15Ω, I <sub>D</sub> =1A, V <sub>GEN</sub> =10V, R <sub>G</sub> =6Ω	-	7.15	-	nS
t <sub>r</sub>	Turn-on Rise Time		-	2.3	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	29.3	-	
t <sub>f</sub>	Turn-off Fall Time		-	2.9	-	
<b>• Drain-Source Diode Characteristics</b>						
V <sub>SD</sub>	Drain-Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =2.5A	-	-	1.2	V

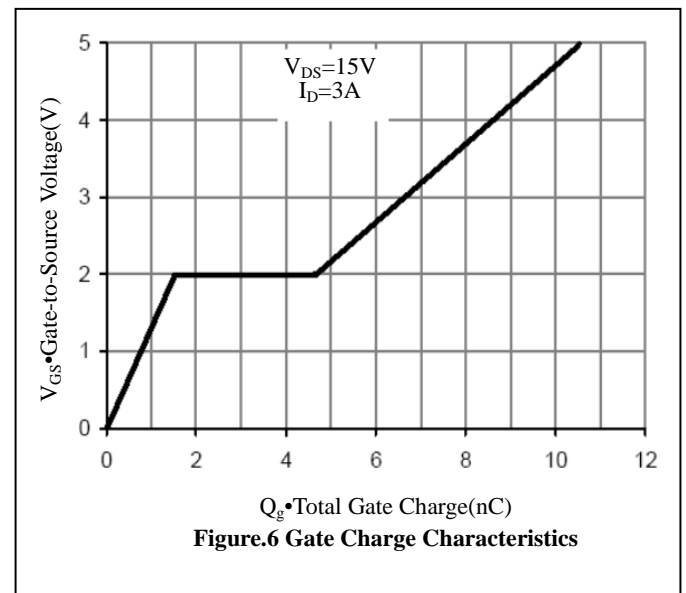
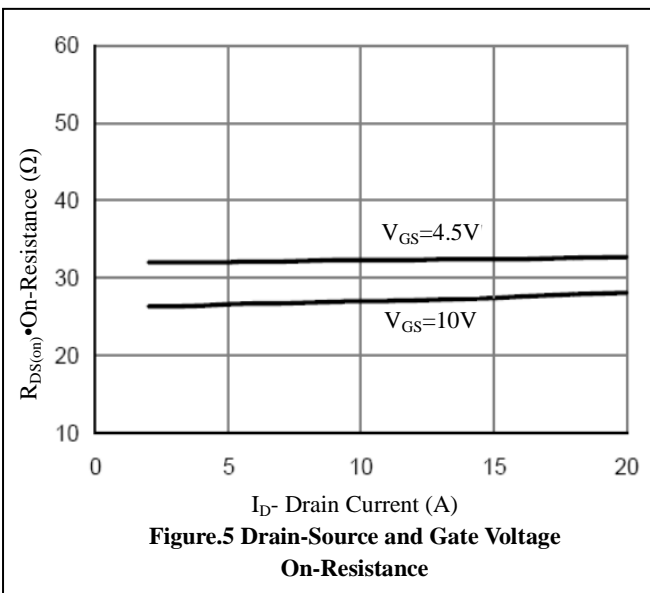
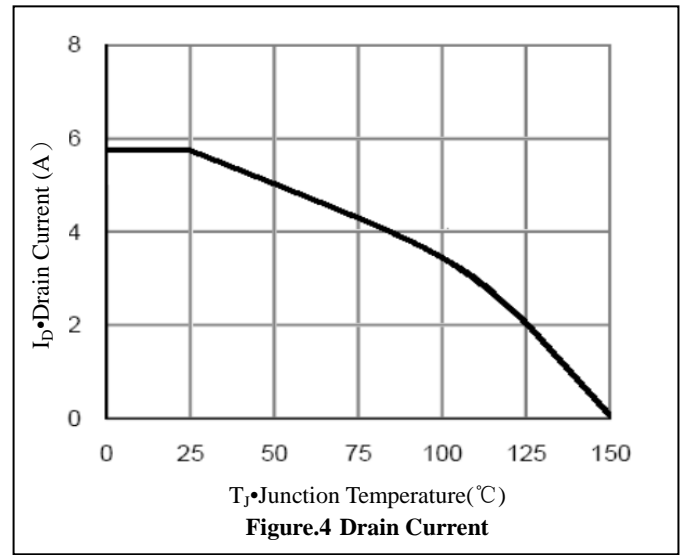
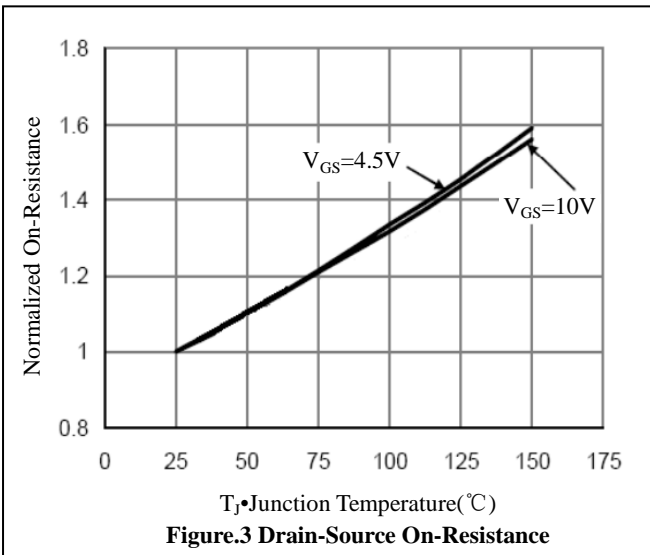
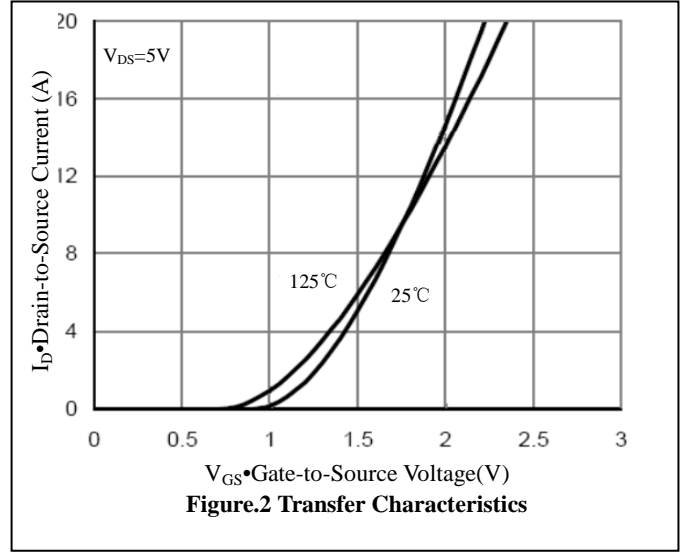
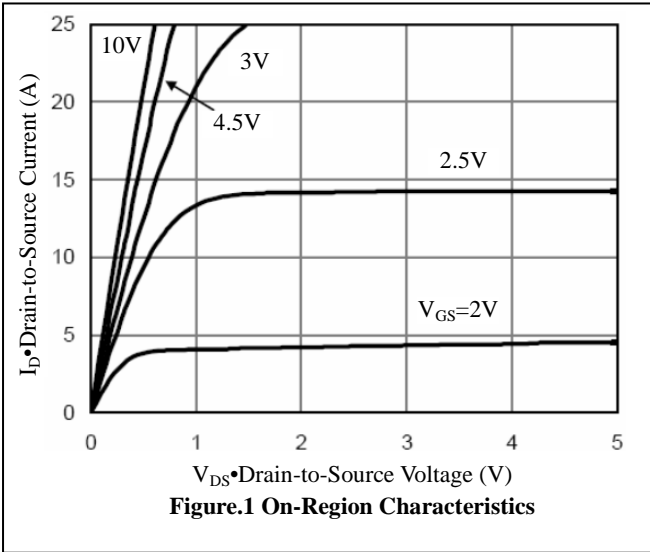
Note: c : Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%.

d: Guaranteed by design, not subject to production testing

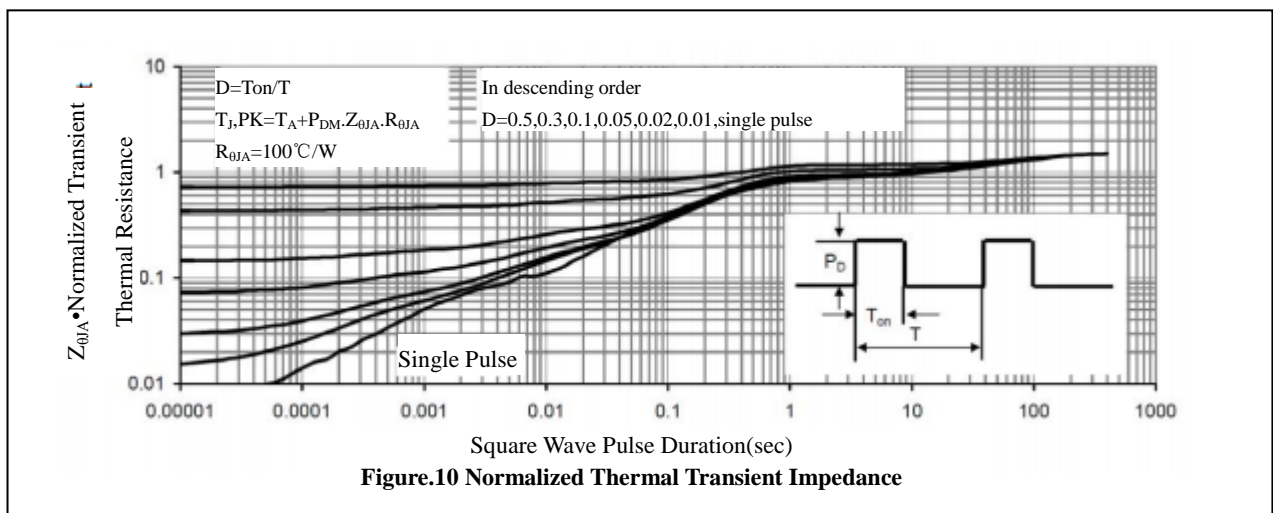
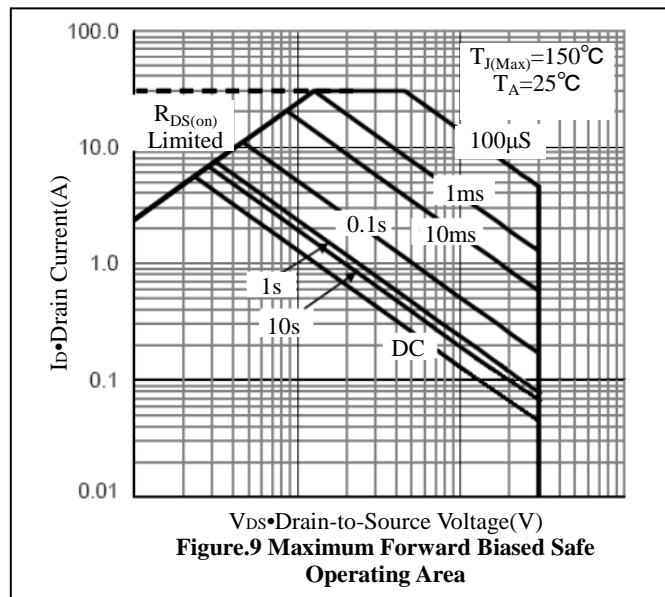
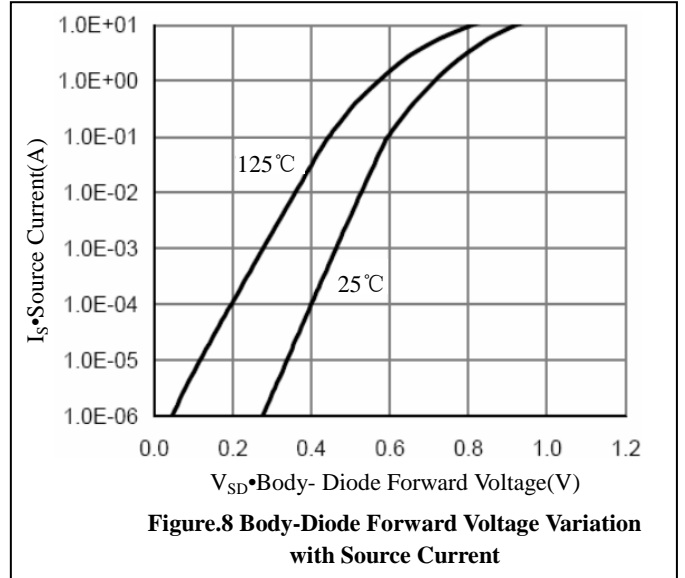
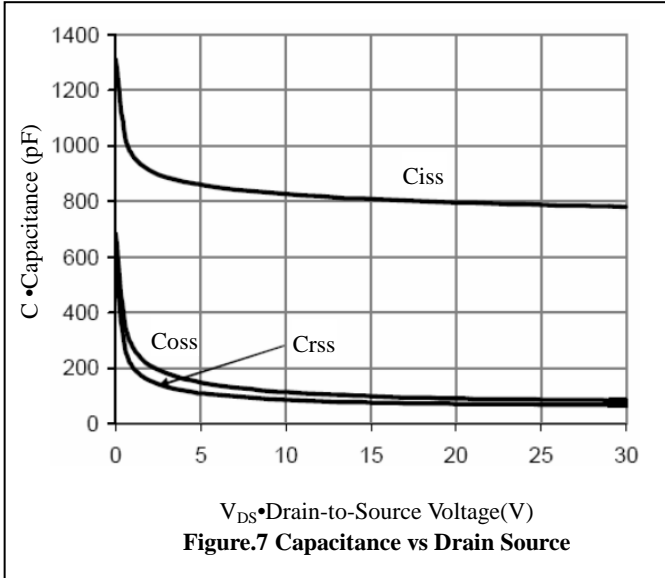


Switching Test Circuit and Switching Waveforms

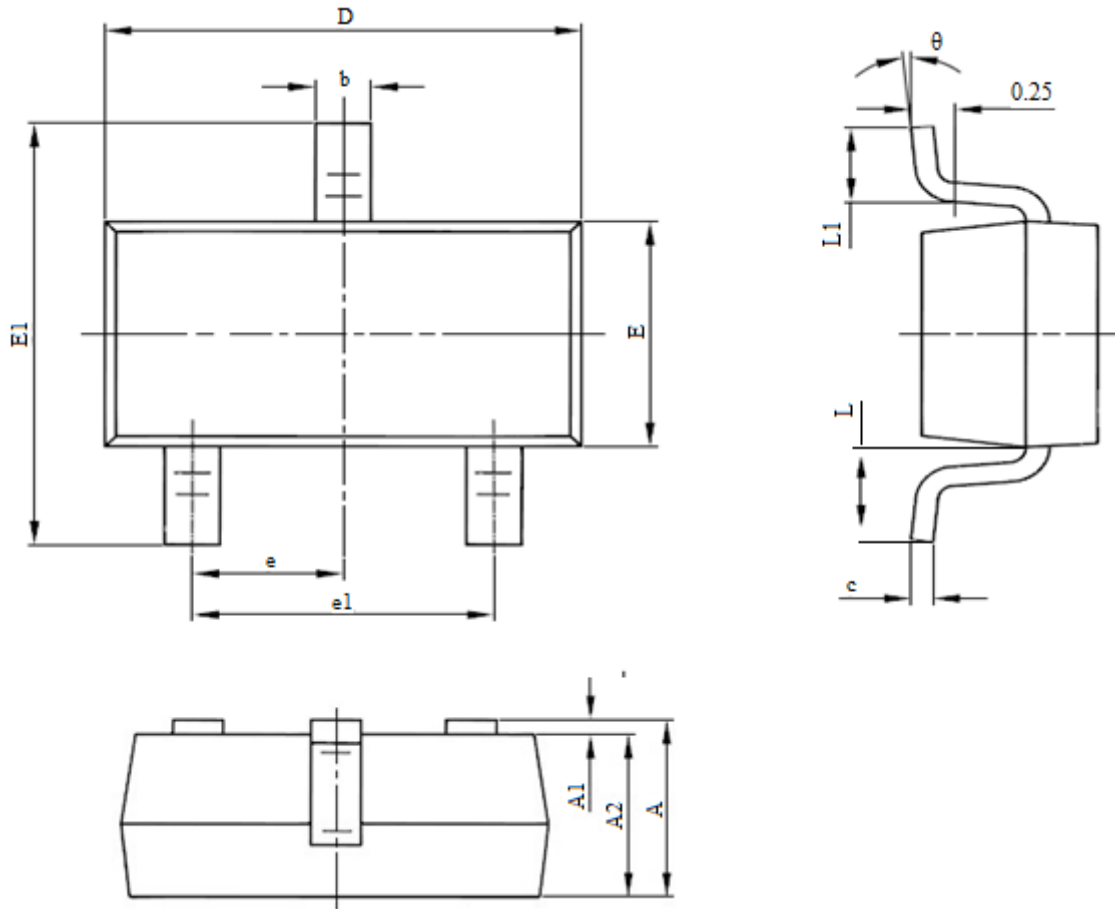
## Characteristics Curve



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## SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.9	1.15	0.035	0.045
A1	0	0.1	0	0.004
A2	0.9	1.05	0.035	0.041
b	0.3	0.5	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.8	3	0.11	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.1
e	0.95(BSC)		0.037(BSC)	
e1	1.8	2	0.071	0.079
L	0.55REF		0.022REF	
L	0.3	0.5	0.012	0.02
$\theta$	0°	8°	0°	8°



## Notice

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2. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.