

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	6.5mΩ@10V	22A
	11mΩ@4.5V	

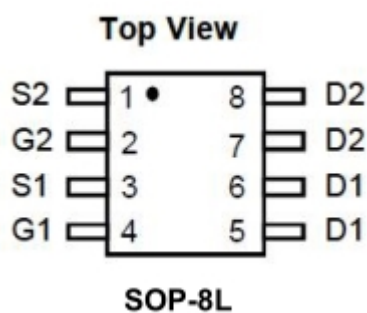
## Feature

- Fast Switching
- Low Gate Charge and Rdson
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

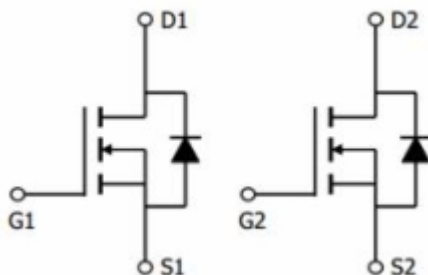
## Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

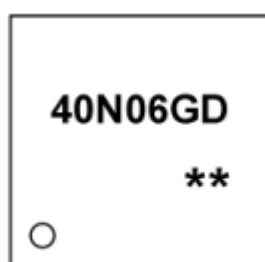
## Package



## Circuit diagram



## Marking



40N06GD      =Device Code  
\*\*                =Week Code

## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	40	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current(T <sub>c</sub> =25°C)	I <sub>D</sub>	22	A
Pulsed Drain Current	I <sub>DM</sub>	88	A
Maximum Power Dissipation(T <sub>c</sub> =25°C)	P <sub>D</sub>	4	W
Thermal Resistance Junction-Case	R <sub>θJC</sub>	31.25	°C/W
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C

## Electrical characteristics

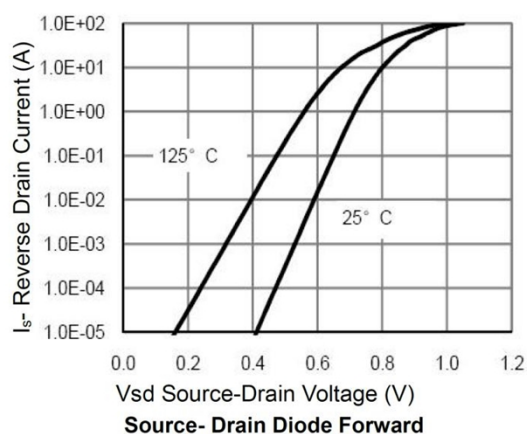
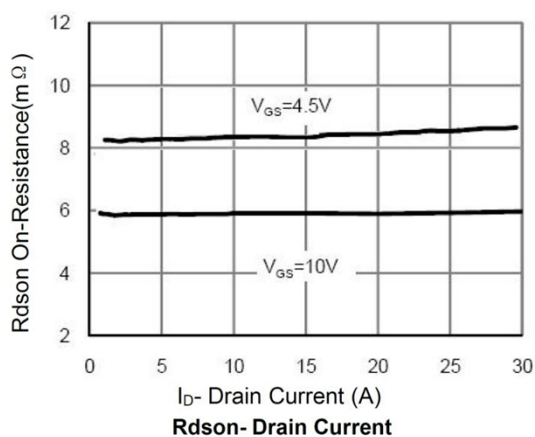
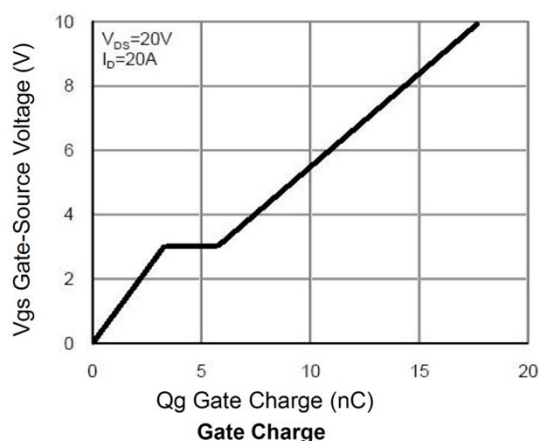
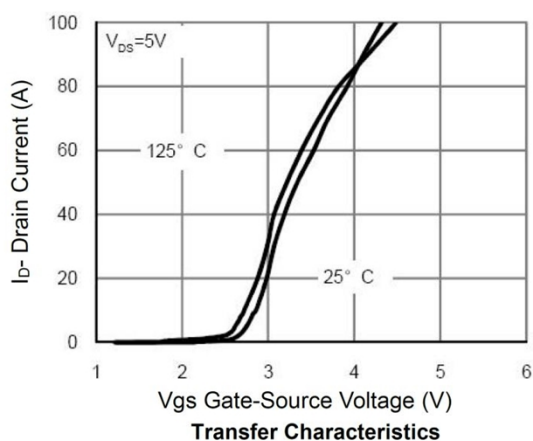
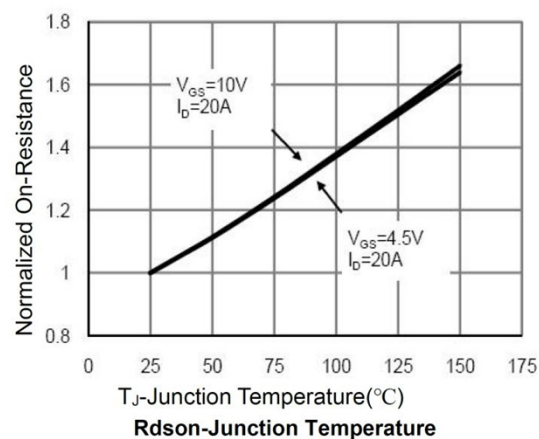
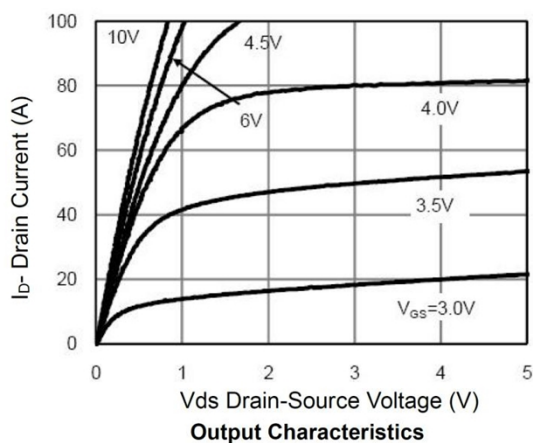
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

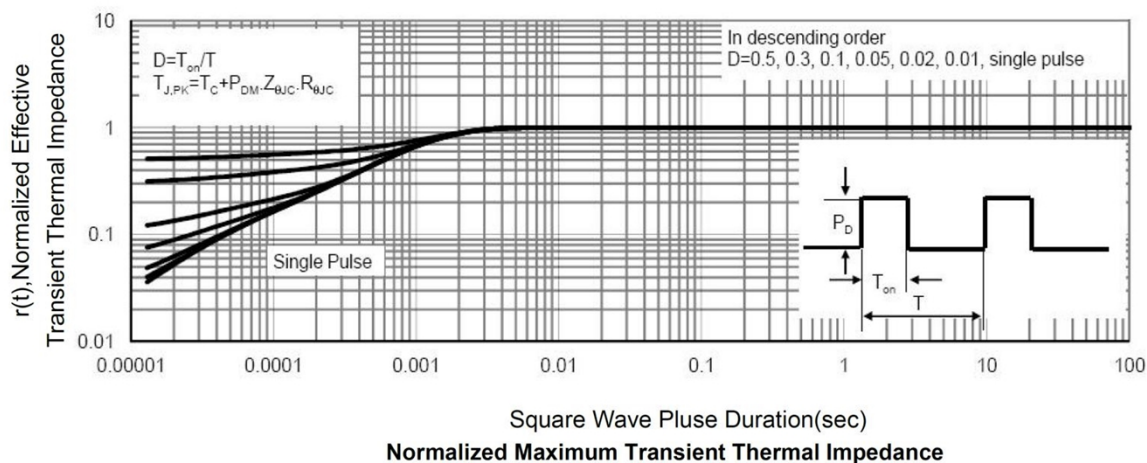
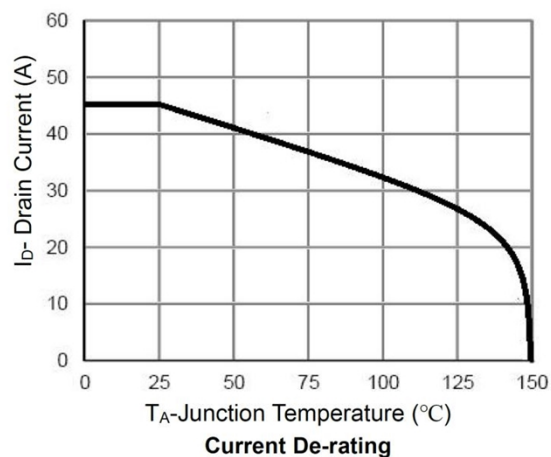
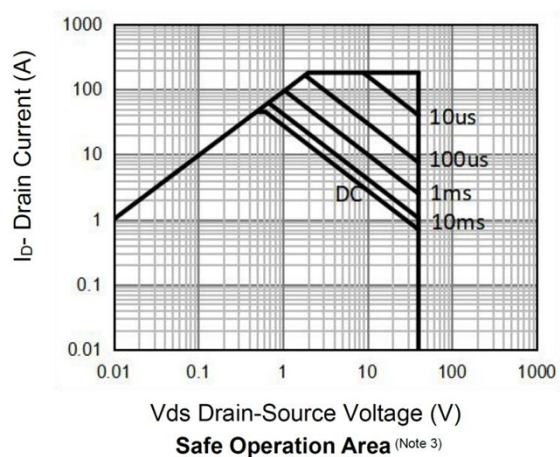
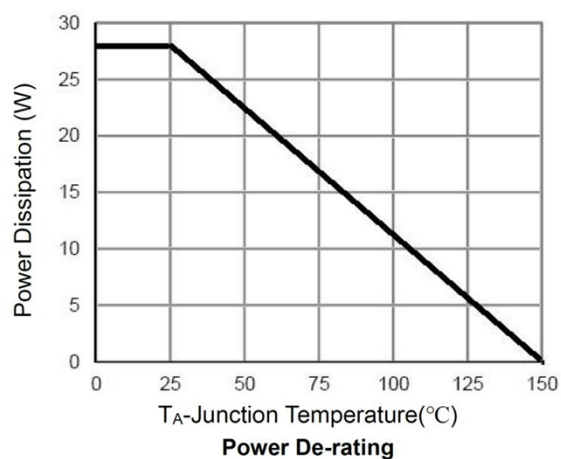
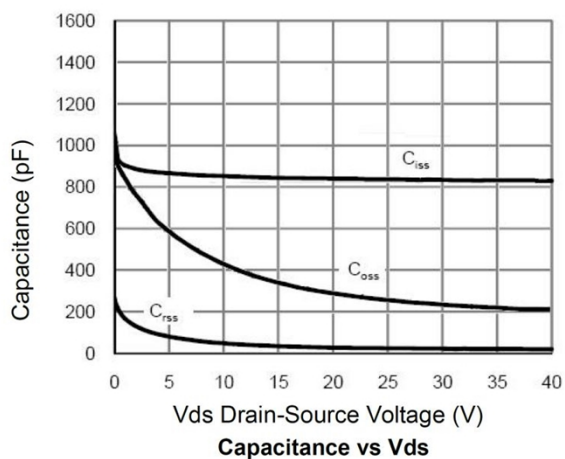
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV (BR)DSS	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	40			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =32V,V <sub>GS</sub> = 0V , T <sub>J</sub> =25°C			1	uA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V			±100	uA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		6.5	9.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A		11	15	
Dynamic Characteristics						
Total Gate Charge(4.5V)	Q <sub>g</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V		25		pF
Gate-Source Charge	Q <sub>gs</sub>			5.4		
Gate-Drain Charge	Q <sub>gd</sub>			3.2		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz		1278		pF
Output Capacitance	C <sub>oss</sub>			583		
Reverse Transfer Capacitance	C <sub>rss</sub>			49		
Switching Characteristics						
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =20V, V <sub>GS</sub> =10V, R <sub>G</sub> =1.6Ω, I <sub>D</sub> =20A		6		nS
Rise Time	T <sub>r</sub>			2.5		
Turn-Off Delay Time	T <sub>d(off)</sub>			22		
Fall Time	T <sub>f</sub>			3.5		
Diode Characteristics						
Diode Forward Voltage <sup>2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>s</sub> =1A , T <sub>J</sub> =25°C			1.2	V

### Note :

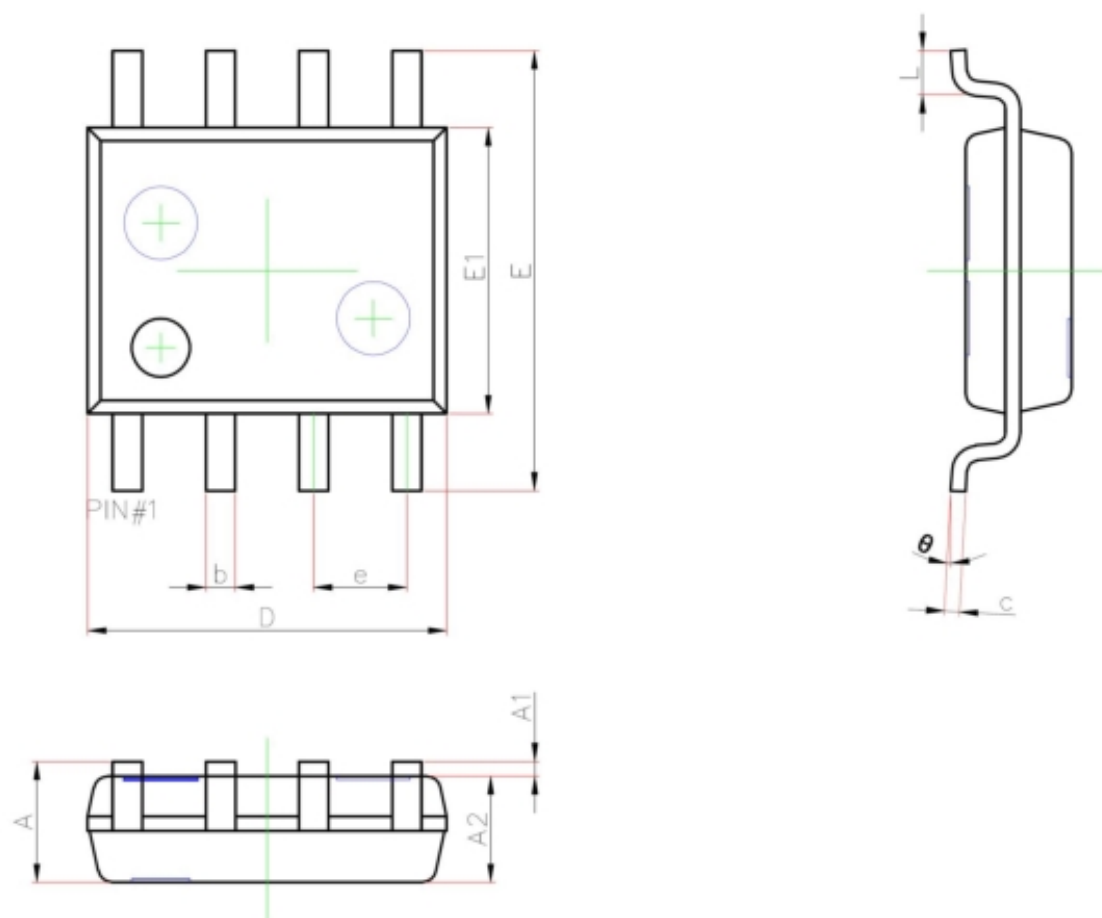
1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is  $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$
4. The power dissipation is limited by  $150^{\circ}\text{C}$  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.

## Typical Characteristics





## SOP-8L Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
$\theta$	0°	8°