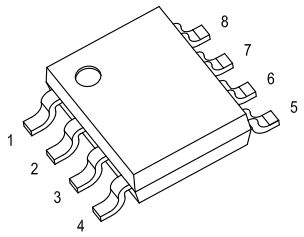
GP10N04Q

40V N-Channel MOSFET

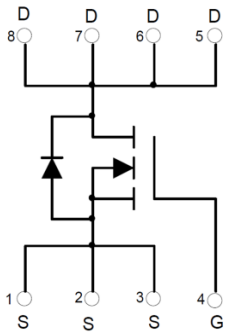
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	10.5mΩ@10V	10A
	11.5mΩ@4.5V	

SOP8



Schematic diagram



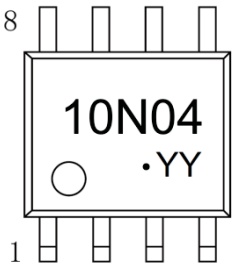
Feature

- High Power and current handing capability
- Load switch
- High density cell design for ultra low $R_{DS(ON)}$
- Lead free product is acquired

Application

- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply
- Power management

MARKING:



10N04= Device code

Solid dot=Pin1 indicator

Solid dot = Green molding compound device, if none, the normal device

YY=Date Code

ABSOLUTE MAXIMUM RATINGS (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current	I_{DM}	25	A
Single Pulse Avalanche Energy	E_{AS}(1)	102	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

(1).E_{AS} condition: V_{DD}=15V,L=0.1mH, R_G=25Ω, Starting T_J = 25°C

MOSFET ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =40V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[1]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.5	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =10V, I_D =10A		10.5	13	mΩ
		V_{GS} =4.5V, I_D =10A		11.5	17	
Forward tranconductance[1]	g_{FS}	V_{DS} =5V, I_D =10A	10	22		S
Dynamic characteristics[2]						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		1875		pF
Output capacitance	C_{oss}			150		
Reverse transfer capacitance	C_{rss}			118		
Switching Characteristics[2]						
Total gate charge	Q_g	V_{DS} =20V,V_{GS} =5V,I_D =10A		44.5		nC
Gate-source charge	Q_{gs}			5.8		
Gate-drain charge	Q_{gd}			11.9		
Turn-on delay time	$t_{d(on)}$	V_{DD}=25V , V_{GS}=10V , R_G=3Ω,,I_D=14A		11.9		ns
Turn-on rise time	t_r			34.8		
Turn-off delay time	$t_{d(off)}$			47.6		
Turn-off fall time	t_f			11.5		
Diode Characteristics						
Continuous Source Current	I_S	V_G=V_D=0V , Force Current			10	A
Pulsed Source Current	I_{SM}				25	
Diode Forward Voltage[1]	V_{SD}	V_{GS}=0V , I_S=10A , T_J=25℃		0.82	1.2	V

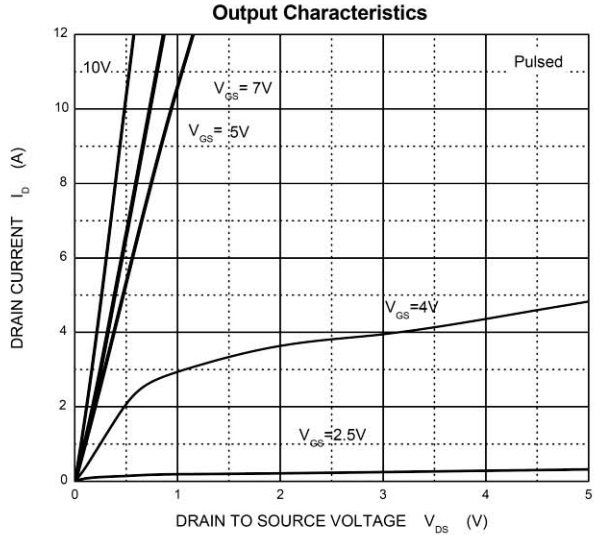
Notes:

1. Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

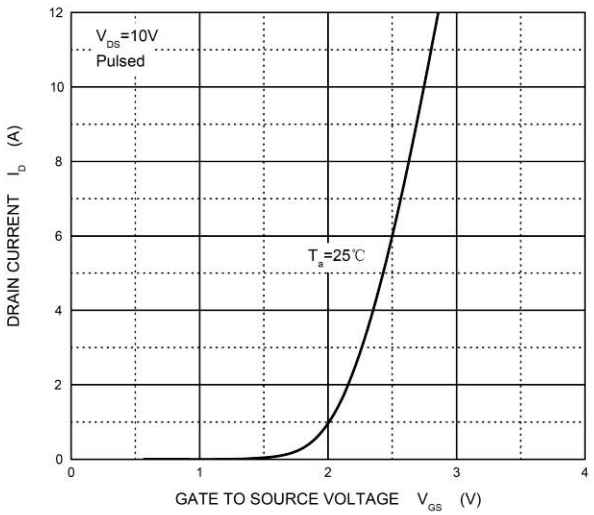
2. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

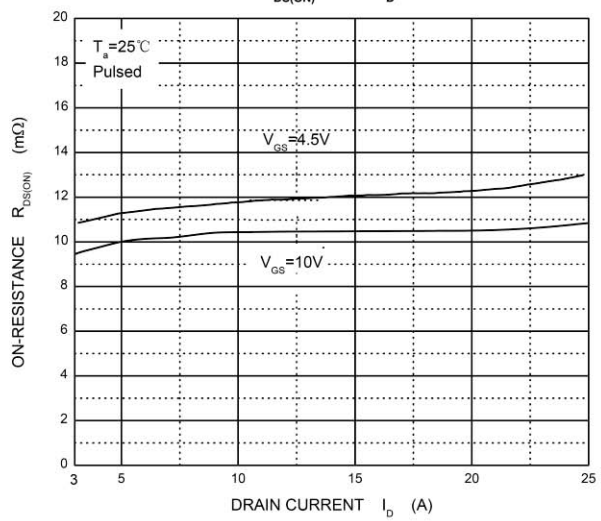
Output Characteristics



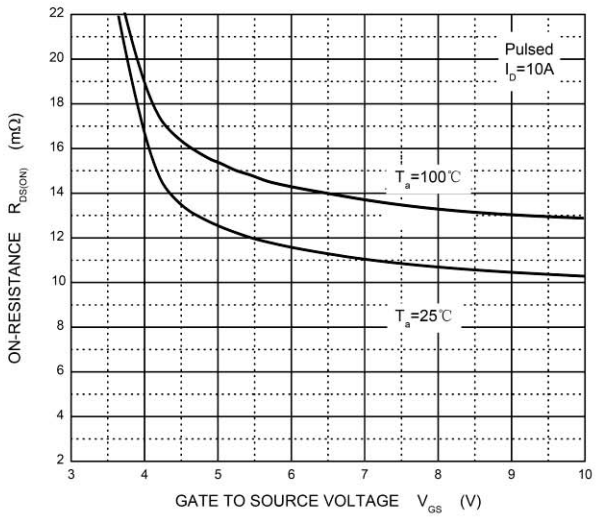
Transfer Characteristics



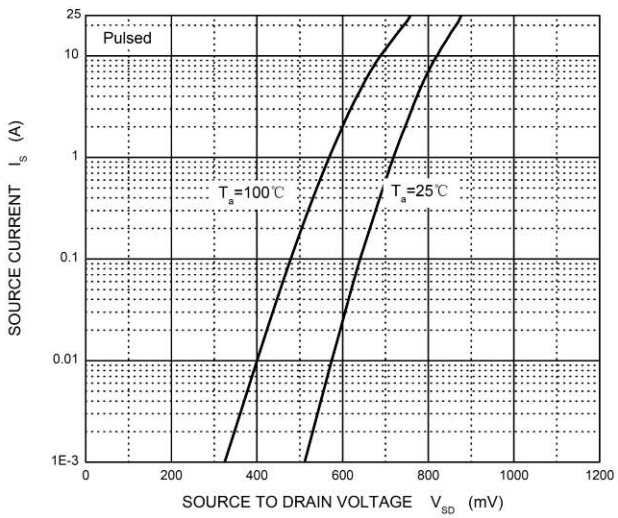
$R_{DS(ON)}$ —— I_D



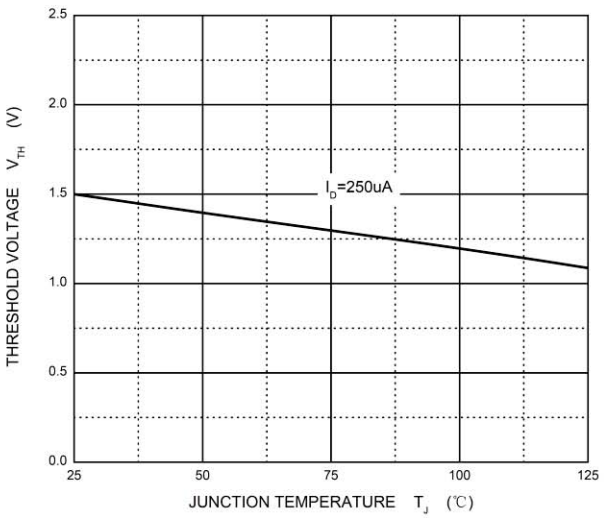
$R_{DS(ON)}$ —— V_{GS}



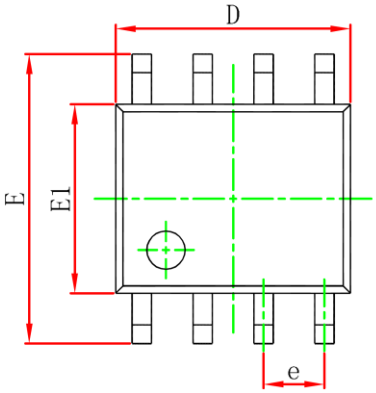
I_S —— V_{SD}

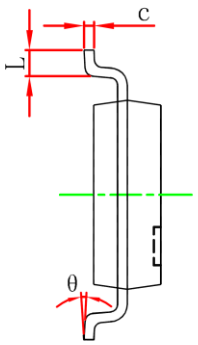


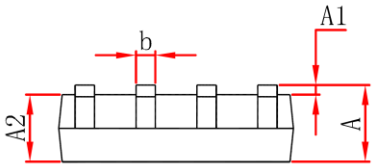
Threshold Voltage



SOP8 Package Information



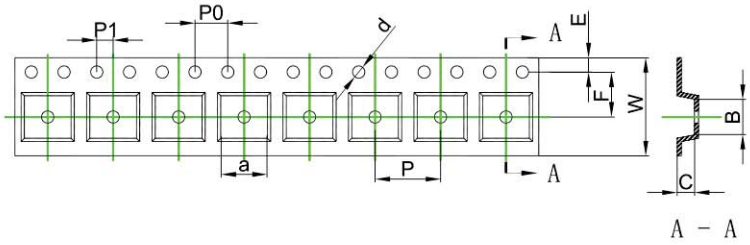




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

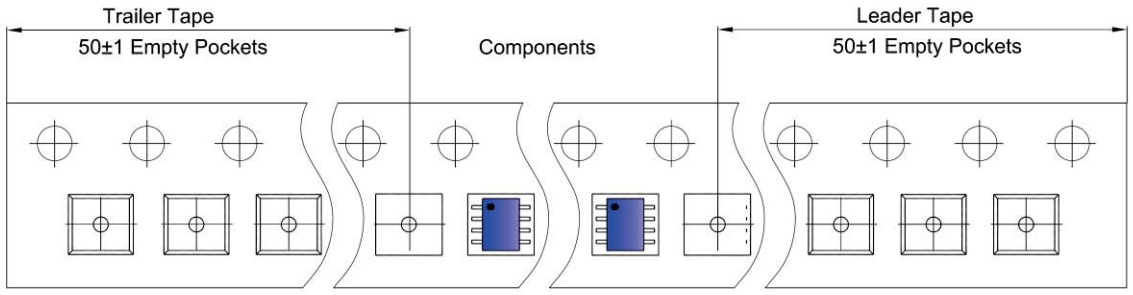
SOP8 Tape and Reel

SOP8 Embossed Carrier Tape

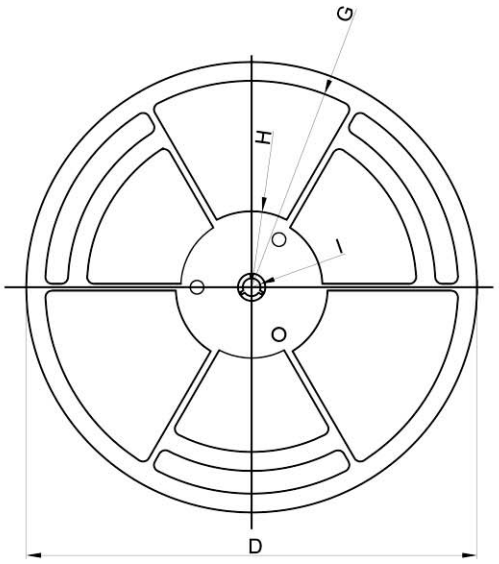


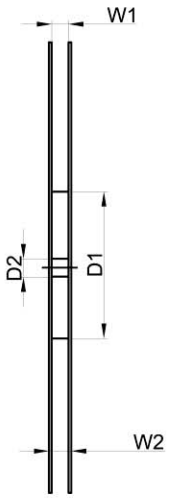
Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP8 Tape Leader and Trailer



SOP8 Reel





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
4,000 pcs	13 inch	8,000 pcs	360×360×65	64,000 pcs	565×380×390	