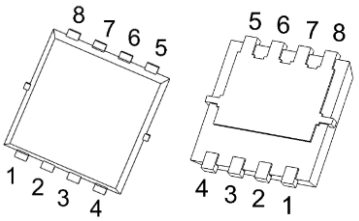
GP25N04P33

40V N-Channel MOSFET

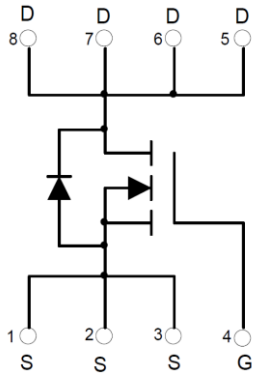
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	7.0mΩ@10V	25A
	9.0mΩ@4.5V	

PDFN3.3×3.3-8L



Schematic diagram



Feature

- High cell density trenched N-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

Application

- Battery protection applications
- Load switch

MARKING:

25N04= Device code

Solid dot=Pin1 indicator

XX=Date Code

ABSOLUTE MAXIMUM RATINGS (TC=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[1,2]	I_D	25	A
Pulsed Drain Current	I_{DM}	100	A
Single Pulsed Avalanche Energy	E_{AS}*	63	mJ
Avalanche Current	I_{AS}	28	A
Power Dissipation	P_D	3	W
Thermal Resistance from Junction to Ambient[1,2]	$R_{\theta JA}$	41.67	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

*E_{AS} Test Condition V_{DD} = 15V, V_{GS} = 10V, L = 0.1mH, I_{AS} = 28A

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

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off 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
On Characteristics						
Gate threshold voltage[3]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.5	V
Drain-source on-resistance[3]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A		7.0	9.5	mΩ
		V_{GS} = 4.5V, I_D = 10A		9.0	15	
Forward transconductance[3]	g_{FS}	V_{DS} = 10V, I_D = 10A				S
Dynamic characteristics						
Input capacitance	C_{iss}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		2845		pF
Output capacitance	C_{oss}			198		
Reverse transfer capacitance	C_{rss}			167		
Switching Characteristics						
Total gate charge	Q_g	V_{DS} = 20V, V_{GS} = 10V, I_D = 10A		30		nC
Gate-source charge	Q_{gs}			8		
Gate-drain charge	Q_{gd}			15		
Turn-on delay time	$t_{d(on)}$	V_{DD} = 15V, V_{GS} = 10V, R_G = 3Ω, I_D = 10A		20		ns
Turn-on rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			70		
Turn-off fall time	t_f			5		
Source-Drain Diode Characteristics						
Continuous Source Current	I_S	V_G = V_D = 0V, Force Current			35	A
Pulsed Source Current	I_{SM}				80	
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 10A, T_J = 25℃			1.2	V

Notes :

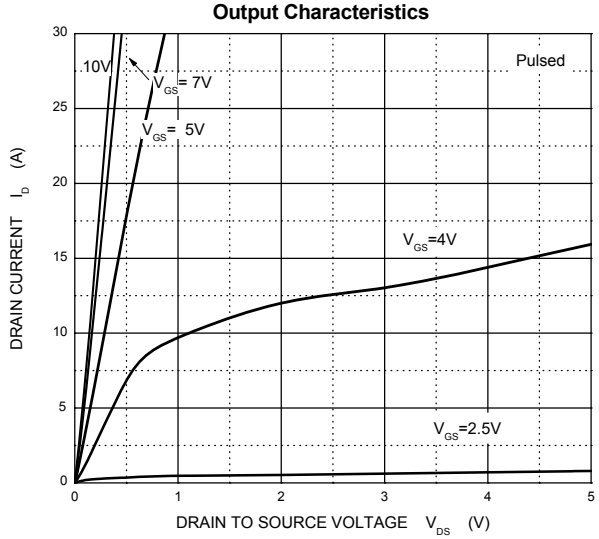
1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A = 25°C.

2.$R_{\theta JA}$ is measured in the steady state

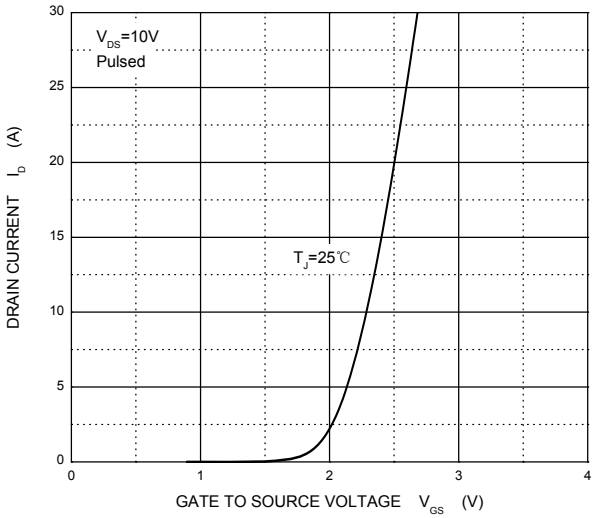
3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Electrical and Thermal Characteristics

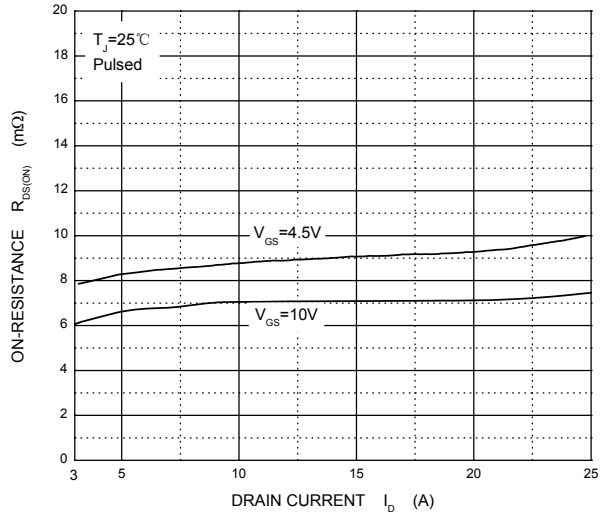
Output Characteristics



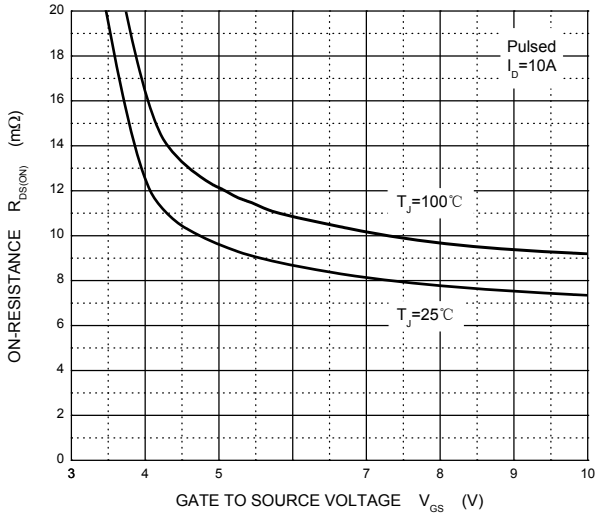
Transfer Characteristics



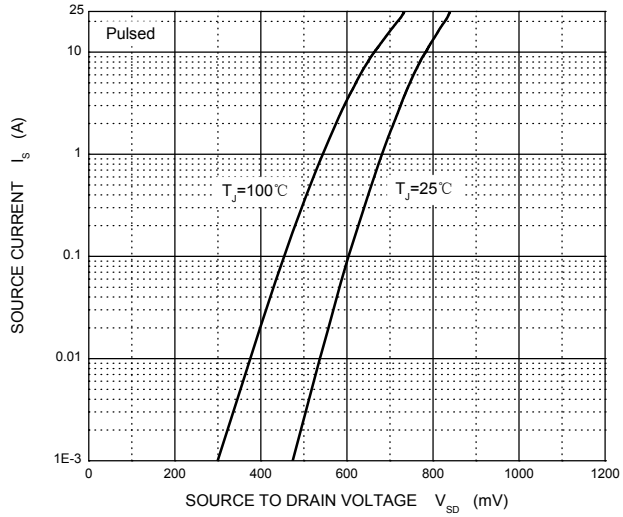
$R_{DS(ON)}$ — I_D



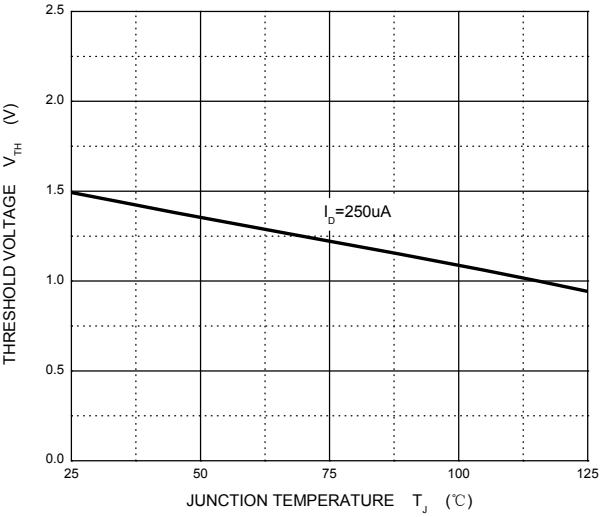
$R_{DS(ON)}$ — V_{GS}



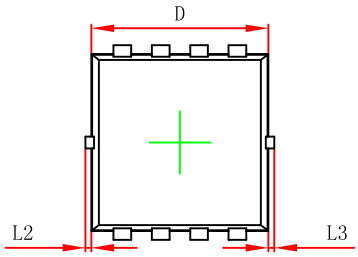
I_S — V_{SD}



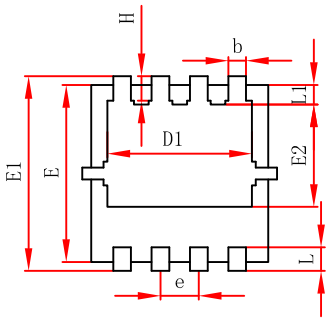
Threshold Voltage



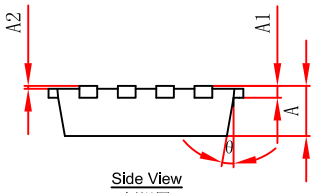
PDFN3.3×3.3-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°