



GP
ELECTRONICS

GP39K-T

20V P-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	450mΩ@-4.5V	-0.66A
	650mΩ@-2.5V	
	950mΩ@-1.8V	

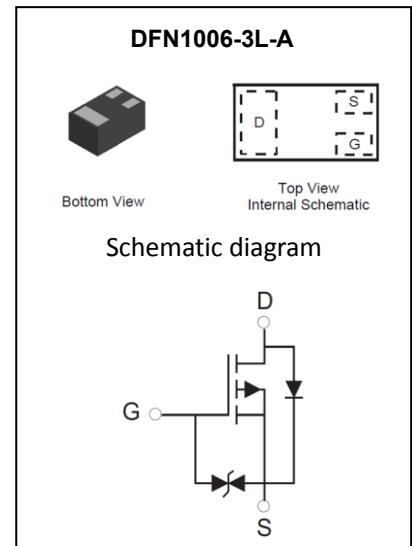
Feature

- Surface Mount Package
- P-Channel Switch with Low RDS(on)
- Operated at Low Logic Level Gate Drive
- ESD Protected

Application

- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

MARKING:



ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ⁽¹⁾	I_D	-0.66	A
Pulsed Drain Current ($t_p=10\mu\text{s}$)	I_{DM}	-1.2	A
Power Dissipation ⁽¹⁾	P_D	100	mW
Thermal Resistance from Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	1250	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+150	
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	T_L	260	

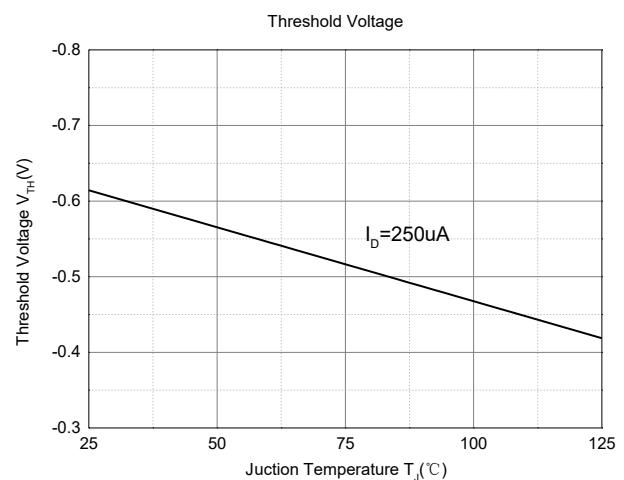
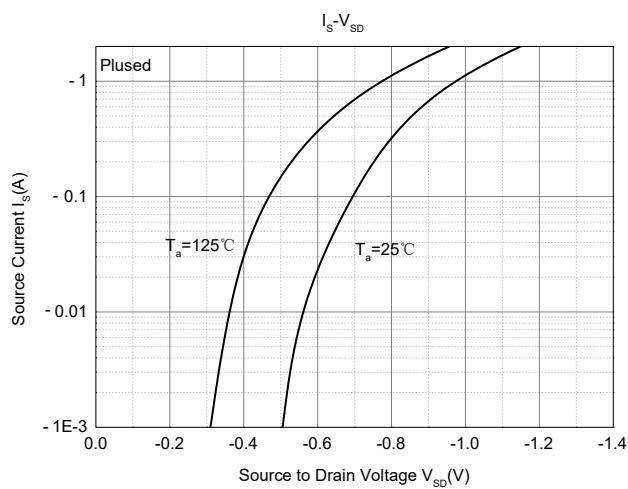
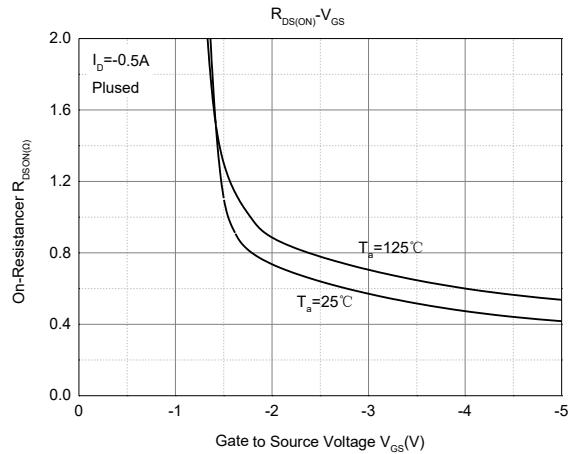
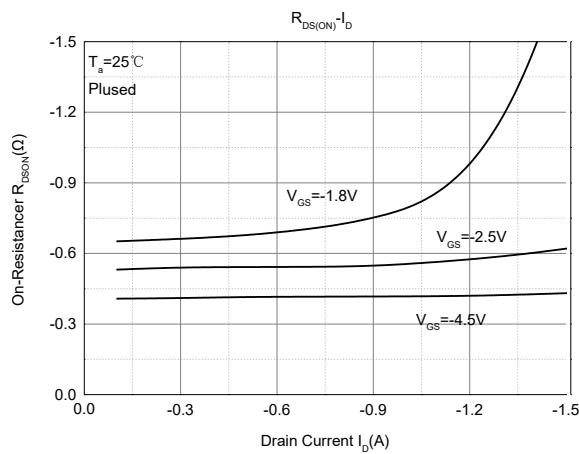
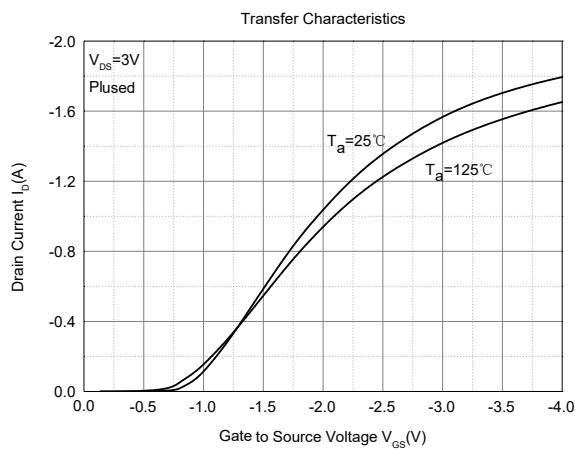
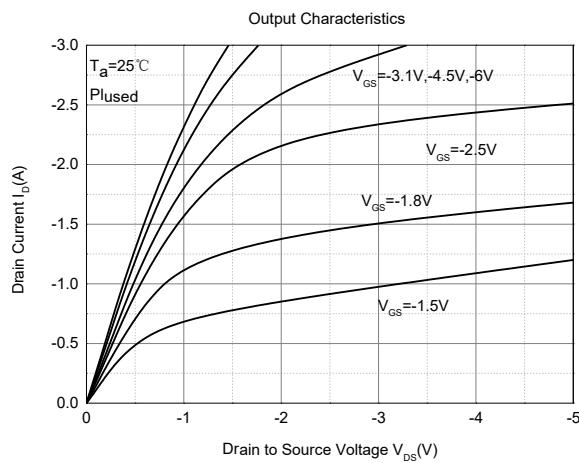
MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise noted)

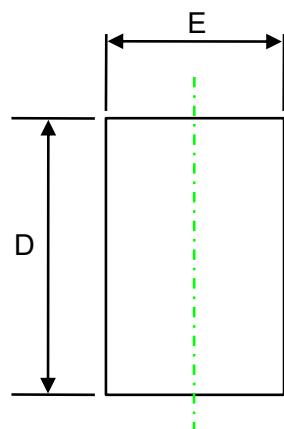
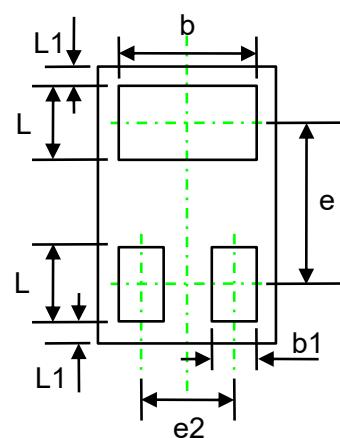
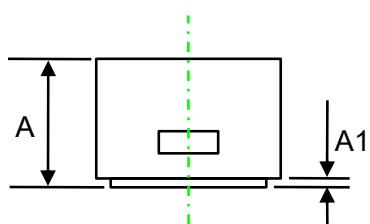
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_D = -250\mu\text{A}$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{\text{DS}} = -20\text{V}, V_{\text{GS}} = 0\text{V}$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{\text{GS}} = \pm 10\text{V}, V_{\text{DS}} = 0\text{V}$			± 20	μA
Gate threshold voltage ⁽²⁾	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_D = -250\mu\text{A}$	-0.35	-0.61	-1.1	V
Drain-source on-resistance ⁽²⁾	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = -4.5\text{V}, I_D = -1\text{A}$		450	580	$\text{m}\Omega$
		$V_{\text{GS}} = -2.5\text{V}, I_D = -0.8\text{A}$		650	840	
		$V_{\text{GS}} = -1.8\text{V}, I_D = -0.5\text{A}$		950		
Forward transconductance ⁽²⁾	g_{FS}	$V_{\text{DS}} = -10\text{V}, I_D = -0.54\text{A}$		1.2		S
Dynamic characteristics⁽⁴⁾						
Input Capacitance	C_{iss}	$V_{\text{DS}} = -16\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$		113		pF
Output Capacitance	C_{oss}			15		
Reverse Transfer Capacitance	C_{rss}			9		
Switching Characteristics⁽⁴⁾						
Turn-on delay time ⁽³⁾	$t_{\text{d}(\text{on})}$	$V_{\text{DS}} = -10\text{V}, I_D = -200\text{mA}, V_{\text{GS}} = -4.5\text{V}, R_G = 10\Omega$		9		ns
Turn-on rise time ⁽³⁾	t_r			5.7		
Turn-off delay time ⁽³⁾	$t_{\text{d}(\text{off})}$			32.6		
Turn-off fall time ⁽³⁾	t_f			20.3		
Source-Drain Diode characteristics						
Diode forward voltage	V_{DS}	$I_S = -0.5\text{A}, V_{\text{GS}} = 0\text{V}$			-1.2	V

Notes:

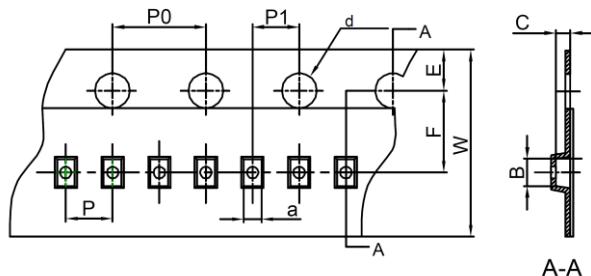
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300 μs , Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

Typical Electrical and Thermal Characteristics

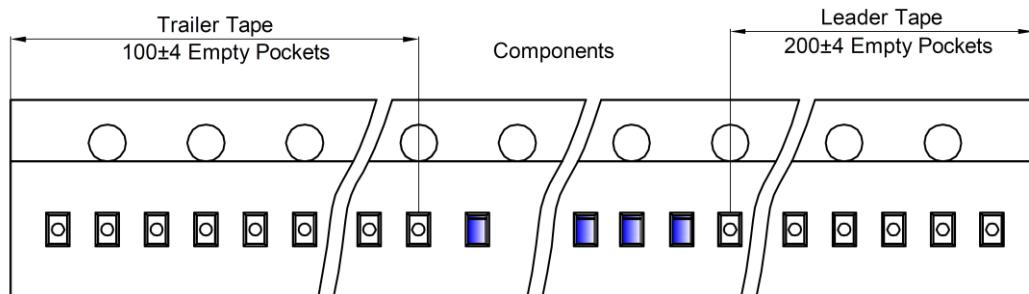
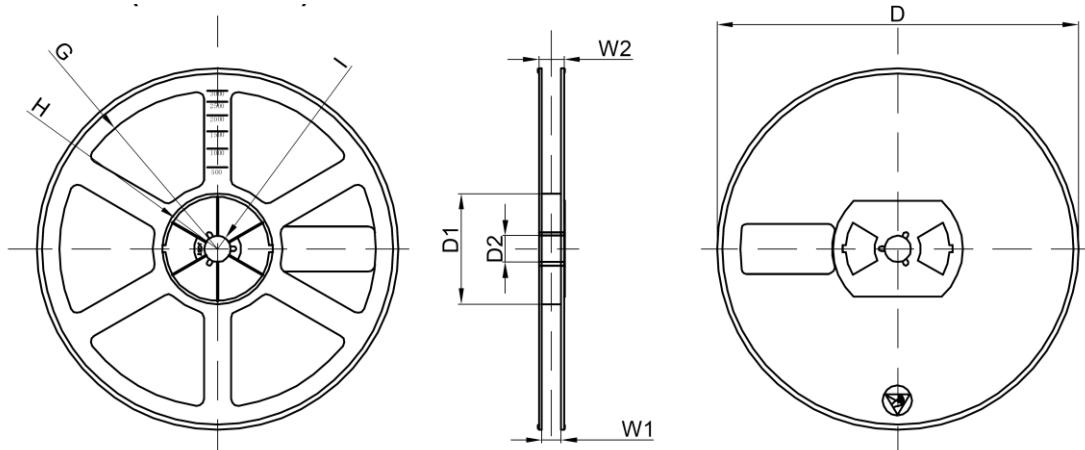


DFN1006-3L-A Package Information

TOP VIEW

BOTTOM VIEW

SIDE VIEW

Symbol	Dimensions In Millimeters (mm)		
	Min.	Typ.	Max.
A	0.34	0.37	0.40
A1	0.00	0.03	0.05
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.45	0.50	0.55
e	-	0.65	-
e2	-	0.35	-
L1	0.05 REF.		
L	0.20	0.25	0.30
b1	0.10	0.15	0.20

DFN1006-3L-A Tape and Reel
DFN1006-3L-A Embossed Carrier Tape


Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
DFN1006-3L	0.66	1.15	0.66	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00

DFN1006-3L-A Tape Leader and Trailer

DFN1006-3L-A Reel


Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
10000 pcs	7 inch	100,000 pcs	203×203×195	400,000 pcs	438×438×220	



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