

### Features

- Operated at Low Logic Level Gate Drive
- N-Channel Switch with Low  $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- ESD Human Body Model 1400V
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

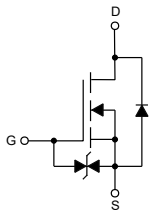
### Maximum Ratings

- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Maximum Thermal Resistance:  $1250^{\circ}\text{C/W}$  Junction to Ambient

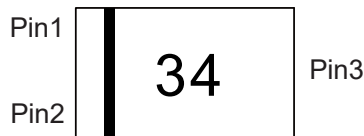
Parameter	Symbol	Rating	Unit
Drain -source Voltage	$V_{DS}$	20V	V
Gate -Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous <sup>(2)</sup>	$I_D$	0.75	A
Pulsed Drain Current	$I_{DM}$	1.8	A
Power Dissipation <sup>(3)</sup>	$P_D$	0.1	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

### Internal Structure and Marking Code

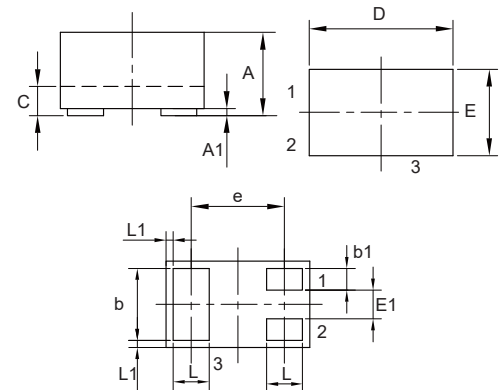


- 1. GATE
- 2. SOURCE
- 3. DRAIN



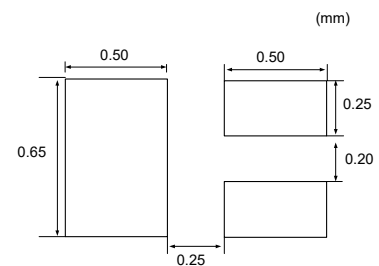
## N-Channel MOSFET

### DFN1006-3



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.018	0.022	0.45	0.55	
A1	0.000	0.002	0.00	0.05	
b	0.018	0.022	0.45	0.55	
b1	0.004	0.008	0.10	0.20	
c	0.005	0.007	0.12	0.18	
D	0.037	0.042	0.95	1.075	
E	0.022	0.026	0.55	0.675	
E1	0.006	0.010	0.15	0.25	
e	0.026		0.65		TYP.
L	0.008	0.012	0.20	0.30	
L1	0.0002		0.05		TYP.

### Suggested Solder Pad Layout



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35	0.75	1.1	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1.0	$\mu A$
Gate-body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 20$	$\mu A$
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=150mA$		0.25	0.5	$\Omega$
		$V_{GS}=2.5V, I_D=150mA$		0.30	0.7	
		$V_{GS}=1.8V, I_D=150mA$		0.37	0.9	
Forward transconductance	$g_{FS}$	$V_{DS}=10V, I_D=150mA$	150			mS
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=150mA$			1.2	V
<b>Dynamic Characteristics</b>						
Input Capacitance <sup>(4)</sup>	$C_{iss}$	$V_{DS}=16V, V_{GS}=0V, f=1MHz$		79	120	pF
Output Capacitance <sup>(4)</sup>	$C_{oss}$			13	20	
Reverse Transfer Capacitance <sup>(4)</sup>	$C_{rss}$			9	15	
<b>Switching Characteristics</b>						
Turn-on Delay Time <sup>(5)</sup>	$t_{d(on)}$	$V_{DS}=10V, V_{GS}=4.5V, I_D=500mA, R_{GEN}=10\Omega$		6.7		ns
Turn-off Delay Time <sup>(5)</sup>	$t_{d(off)}$			17.3		
Rise Time <sup>(5)</sup>	$t_r$			4.8		
Fall Time <sup>(5)</sup>	$t_f$			7.4		

Note:

- Surface Mounted on FR4 board using the minimum recommended pad size.
- Pulse Test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to productin
- Switching characteristics are independent of operating junction temperatures.

Curve Characteristics

Fig. 1 - Output Characteristics

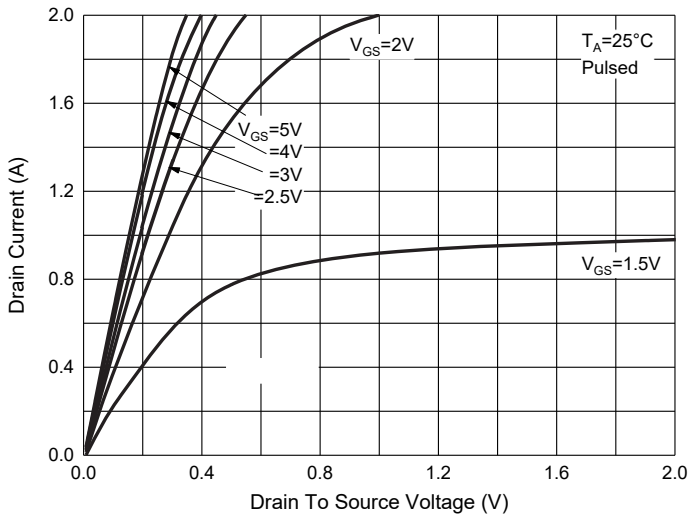


Fig. 2 - Transfer Characteristics

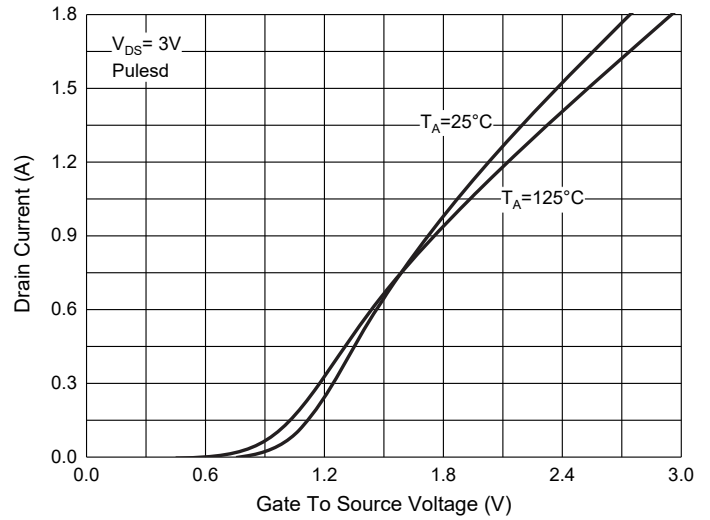


Fig. 3 -  $R_{DS(ON)} - I_D$

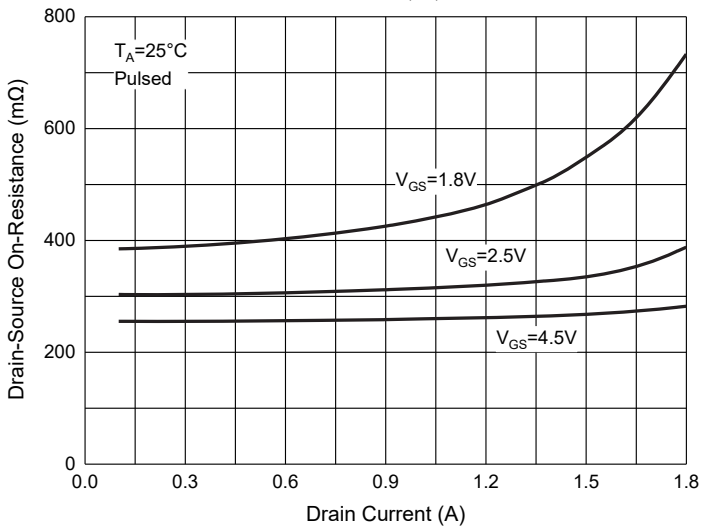


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

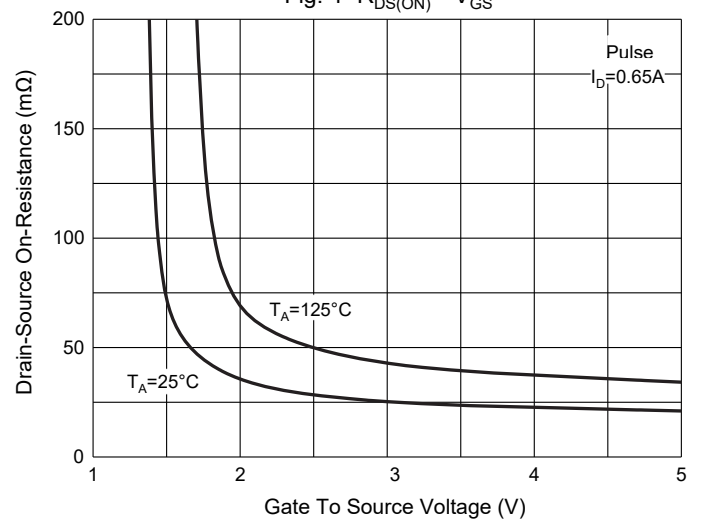


Fig. 5 -  $I_S - V_{SD}$

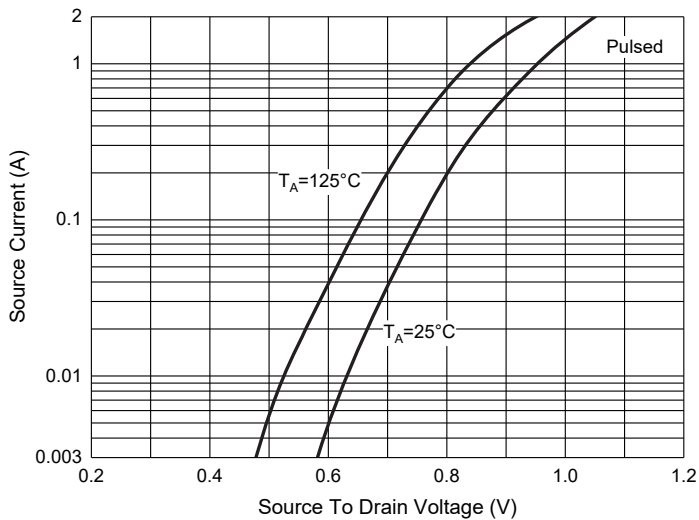
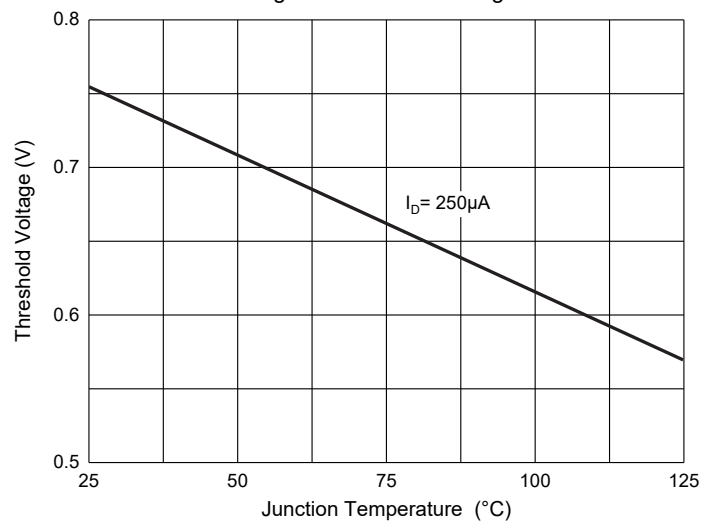


Fig. 6 - Threshold Voltage



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:10Kpcs/Reel

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