

Small Signal MOSFET 300 mAmps, 60V N-Channel DFN1006-3

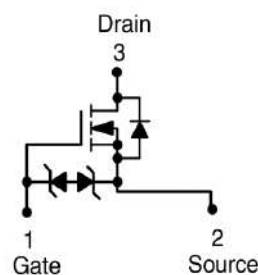
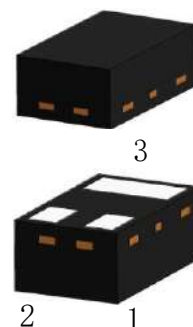
Features:

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD Protected
- Low RDS(on)
- Surface Mount Package

Applications:

- Low Side Load Switch
- Level Shift Circuits
- DC-DC Converter
- Portable Applications i.e. DSC, PDA, Cell Phone, etc.

DFN1006-3



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
KLM1D03N06	RK	10000/Tape&Reel

MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	VDSS	60	V
Gate-Source Voltage	VGS	±20	V
Drain Current	ID		mA
– Steady State TA = 25°C		300	
TA = 85°C		230	
– t<5s TA = 25°C		380	
TA = 85°C		270	
Pulsed Drain Current (tp=10µs)	IDM	1.5	A
Source Current (Body Diode)	IS	300	mA

THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation (Note 1) – Steady State	PD	250	mW
Junction-to-Ambient(Note 1) – Steady State	R θ JA	500	°C/W
Lead Temperature for Soldering Purposes (1/8 " from case for 10 s)	TL	260	°C
Junction and Storage temperature	TJ,Tstg	-55~+150	°C
Gate-Source ESD Rating(HBM, Method 3015)	ESD	2000	V

1. Surface-mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces)

ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)	VBRDSS	60	-	-	V
Drain–to–Source Breakdown Voltage Temperature Coefficient	VBRDSS/TJ	-	71	-	mV/°C
Zero Gate Voltage Drain Current (VGS = 0, VDS = 60 V, TJ = 25°C)	IDSS	-	-	1.0	μA
(VGS = 0, VDS = 60 V, TJ = 85°C)		-	-	30	μA
(VGS = 0, VDS = 50 V, TJ = 25°C)		-	-	100	nA
Gate–to–Source Leakage Current (VDS = 0 V, VGS = ±20 V)	IGSS	-	-	±10	μA

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS = VGS, ID = 250μA)	VGS(th)	1.0	-	2.5	V
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	4	-	mV/°C
Drain–Source On–State Resistance (VGS = 10 V, ID = 500 mA)	RDS(on)	-	-	2.3	Ω
(VGS = 4.5 V, ID = 50 mA)		-	-	2.8	
Forward Transconductance (VDS = 5.0 V, ID = 200 mA)	gfs	-	80	-	S

CHARGES AND CAPACITANCES

Input Capacitance	(VGS = 0 V, f = 1 MHz, VDS = 25 V)	Ciss	-	32.8	-	pF
Output Capacitance		Coss	-	5.4	-	
Reverse Transfer Capacitance		Crss	-	2.9	-	
Total Gate Charge	(VGS = 4.5 V, VDS = 10 V, ID = 200 mA)	QG(TOT)	-	0.7	-	nC
Threshold Gate Charge		QG(TH)	-	0.1	-	
Gate–to–Source Charge		QGS	-	0.3	-	
Gate–to–Drain Charge		QGD	-	0.1	-	

SWITCHING CHARACTERISTICS

Turn-On Delay Time	(VGS = 10 V, VDD = 10 V, ID = 500 mA)	td(on)	-	9.9	-	ns
Rise Time		tr	-	5	-	
Turn-Off Delay Time		td(off)	-	39.4	-	
Fall Time		tf	-	17.9	-	

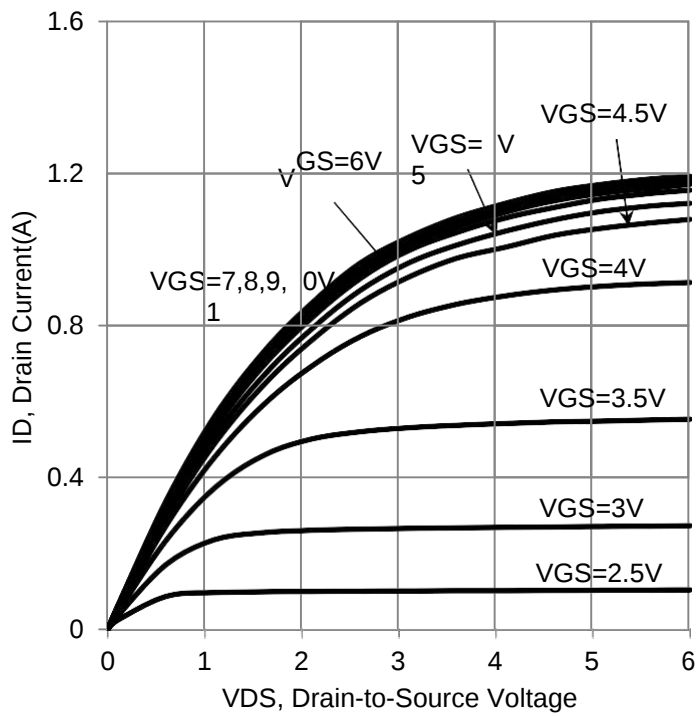
DRAIN–SOURCE DIODE CHARACTERISTICS

Diode Forward On–Voltage (IS = 115 mA, VGS = 0 V)	TJ = 25°C	VSD	-	-	1.4	V
	TJ = 85°C		-	0.7	-	

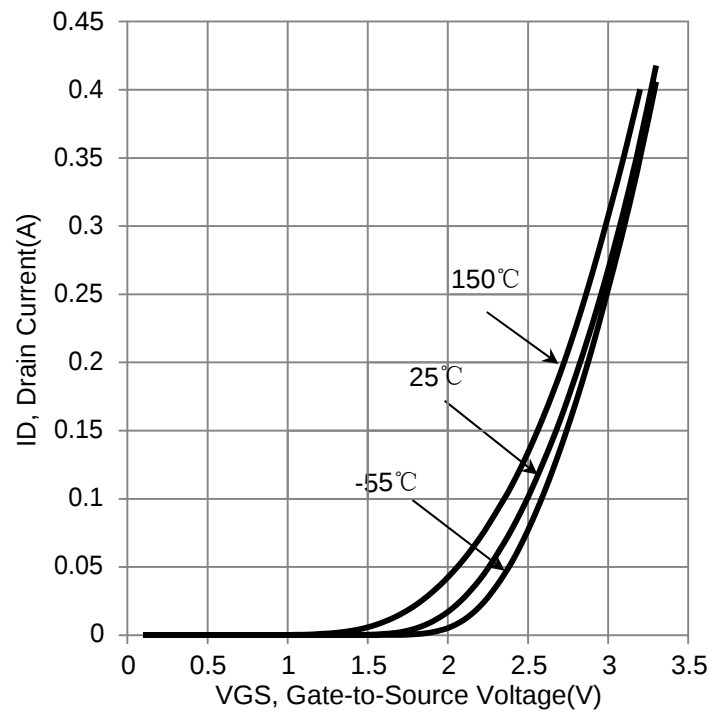
2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

3. Switching characteristics are independent of operating junction temperatures

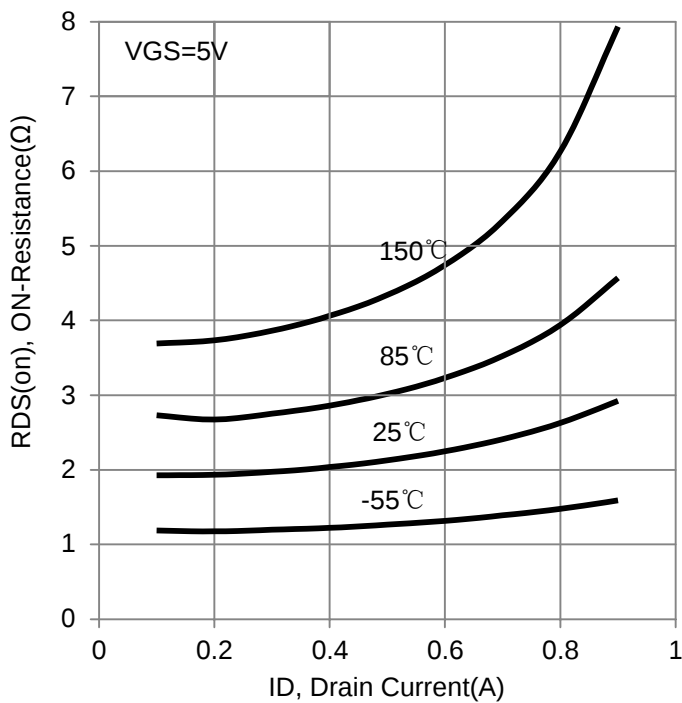
ELECTRICAL CHARACTERISTICS CURVES



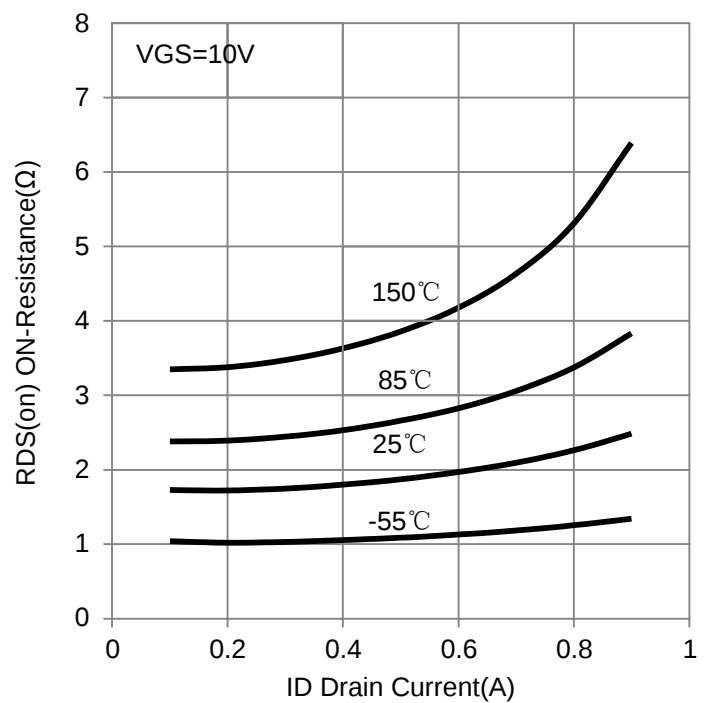
On-Region Characteristics



Transfer Characteristics

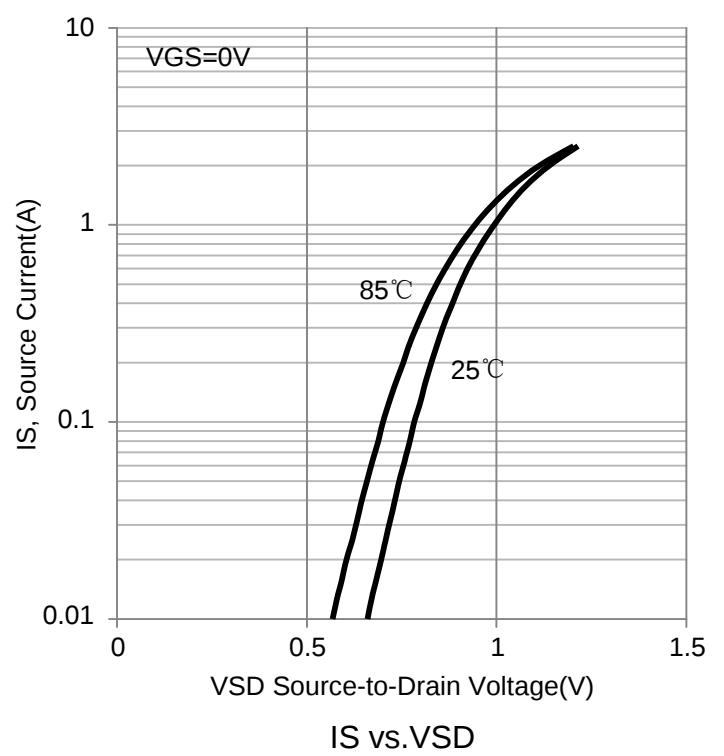
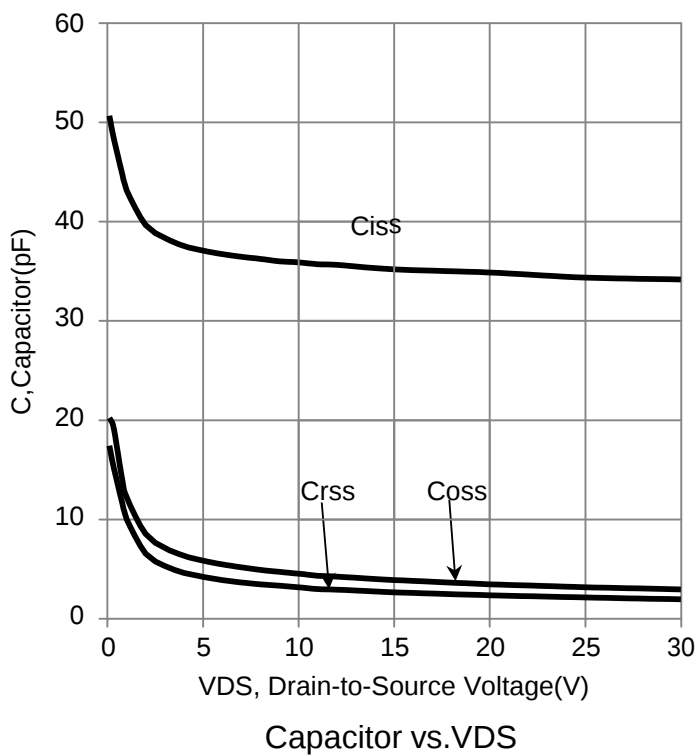
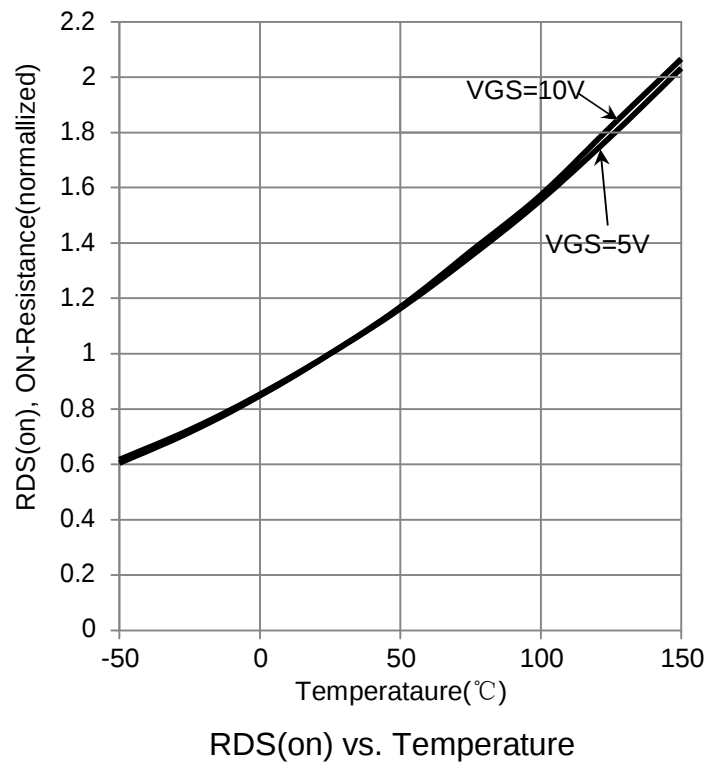
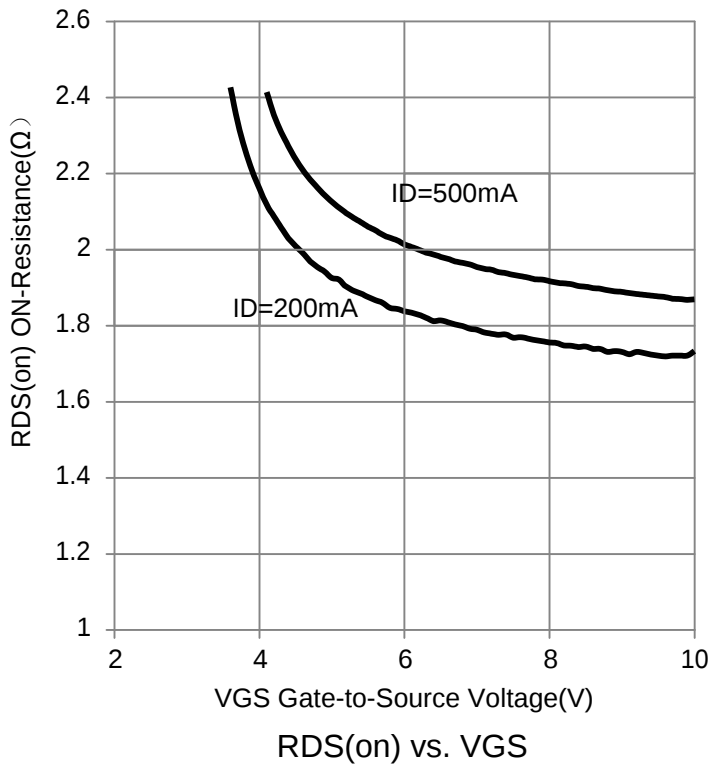


$R_{DS(on)}$ vs. I_D

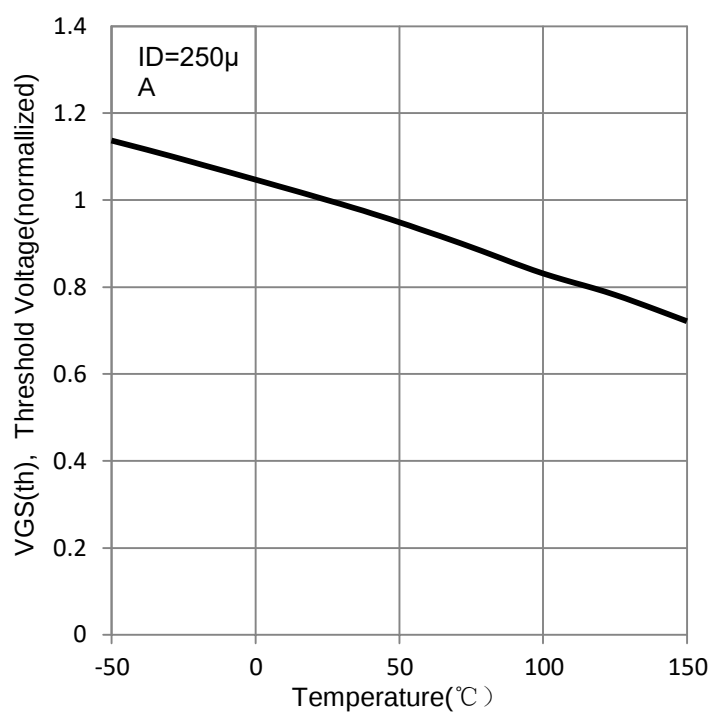


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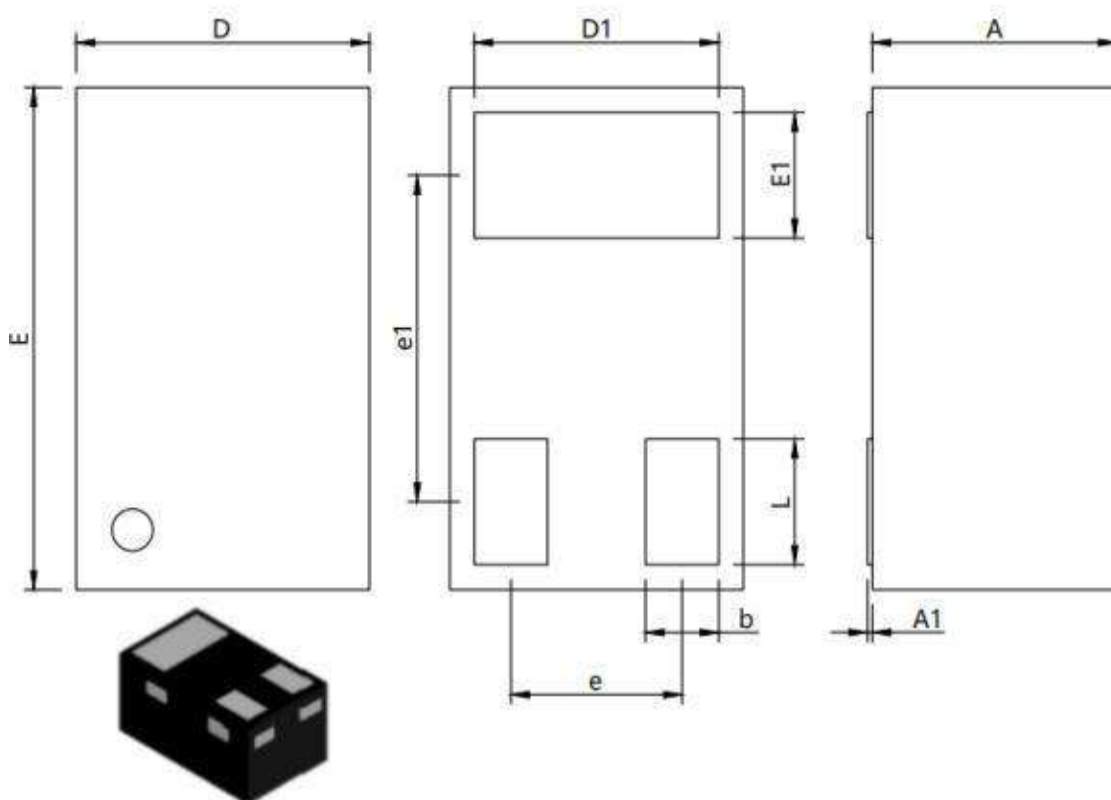
ELECTRICAL CHARACTERISTICS CURVES (Con.)



ELECTRICAL CHARACTERISTICS CURVES (Con.)



VGS(th) vs. Temperature



DFN1.0*0.6*0.5-3L REV.M POD			
	min(mm)	typ(mm)	max(mm)
D	0.55	0.60	0.65
E	0.95	1.00	1.05
D1	0.45	0.50	0.55
E1	0.20	0.25	0.30
e	0.35bsc		
e1	0.65bsc		
L	0.20	0.25	0.30
b	0.10	0.15	0.20
A	0.45	0.50	0.55
A1	-	0	0.05