

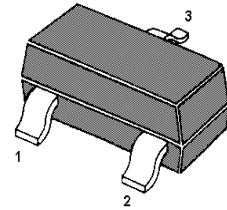
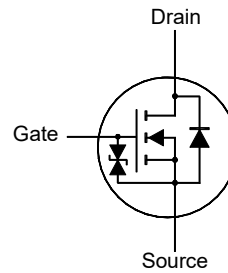
MKA06N4K0LK

N-Channel Enhancement Mode MOSFET

Features

- High speed switch
- Typical ESD Protection HBM Class 1C

Classification	Voltage Range(V)
0A	< 125
0B	125 to < 250
1A	250 to < 500
1B	500 to < 1000
1C	1000 to < 2000
2	2000 to < 4000
3A	4000 to < 8000
3B	≥ 8000



1. Gate 2. Source 3. Drain
SOT-23 Plastic Package

Applications

- Portable appliances
- Load switch appliances

Absolute Maximum Ratings($T_a = 25^\circ\text{C}$)

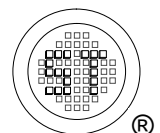
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	0.5	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	1.5	A
Power Dissipation	P_D	0.57	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	219	$^\circ\text{C}/\text{W}$

¹⁾ Pulse Test: Pulse Width $\leq 100 \mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{j(\text{MAX})} = 150^\circ\text{C}$.

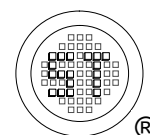
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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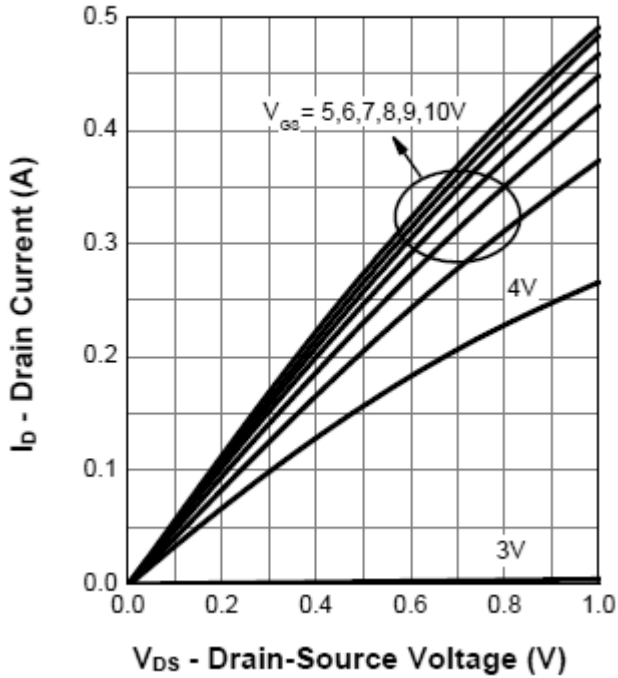
Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $I_D = 250 \mu\text{A}$	$V_{(BR)DSS}$	60	-	-	V
Zero Gate Voltage Drain Current at $V_{DS} = 48 \text{ V}$	I_{DSS}	-	-	1	μA
Gate-Source Leakage at $V_{GS} = \pm 20 \text{ V}$	I_{GSS}	-	-	± 1	μA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance at $V_{GS} = 10 \text{ V}, I_D = 0.5 \text{ A}$ at $V_{GS} = 4.5 \text{ V}, I_D = 0.2 \text{ A}$	$R_{DS(on)}$	- -	- -	3 4	Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $V_{DS} = 10 \text{ V}, I_D = 0.2 \text{ A}$	g_{FS}	-	240	-	mS
Input Capacitance at $V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	25.6	-	pF
Output Capacitance at $V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{oss}	-	3.3	-	pF
Reverse Transfer Capacitance at $V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{rss}	-	0.12	-	pF
Gate Charge Total at $V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}$	Q_g	-	1.1	-	nC
Gate to Source Gate Charge at $V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}$	Q_{gs}	-	0.3	-	nC
Gate to Drain Charge at $V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}$	Q_{gd}	-	0.1	-	nC
Turn-On Delay Time at $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}, R_G = 4.5 \Omega$	$t_{d(on)}$	-	3	-	ns
Rise Time at $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}, R_G = 4.5 \Omega$	t_r	-	17	-	ns
Turn-Off Delay Time at $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}, R_G = 4.5 \Omega$	$t_{d(off)}$	-	9	-	ns
Fall Time at $V_{DD} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 0.4 \text{ A}, R_G = 4.5 \Omega$	t_f	-	28	-	ns
Body-Diode PARAMETERS					
Diode Forward Voltage at $I_S = 0.4 \text{ A}$	V_{SD}	-	-	1.2	V

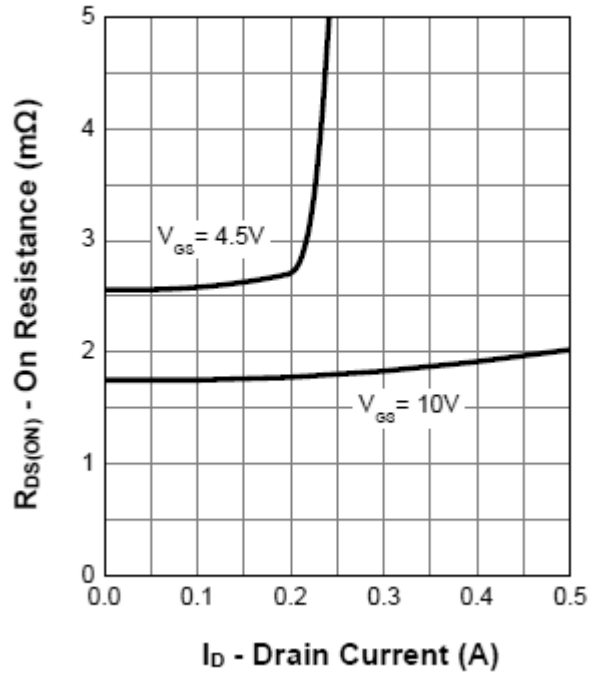


Electrical Characteristics Curves

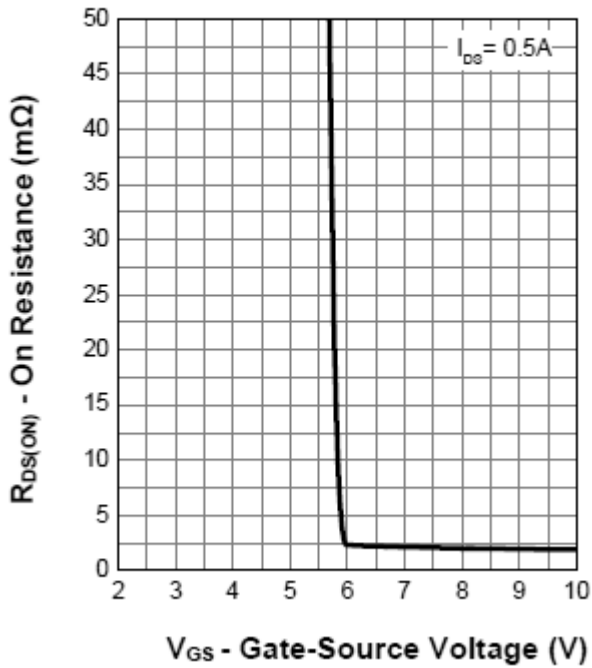
Output Characteristics



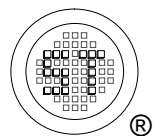
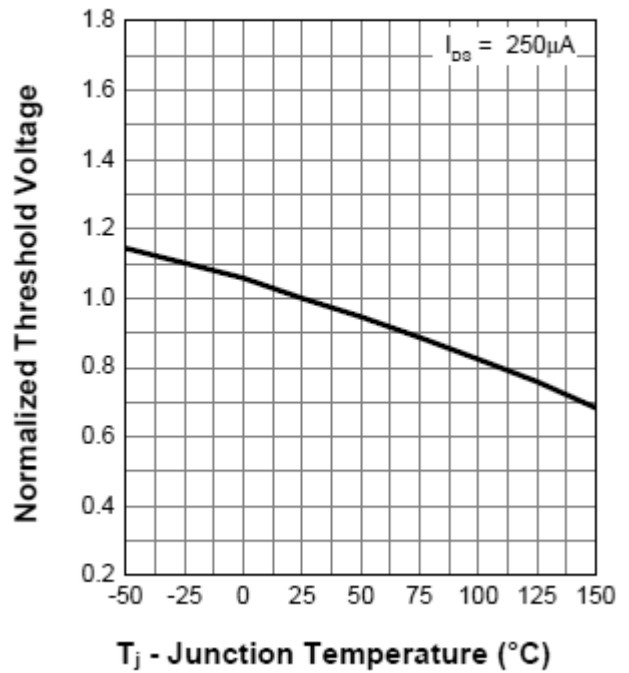
On Resistance



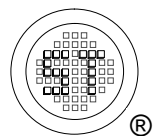
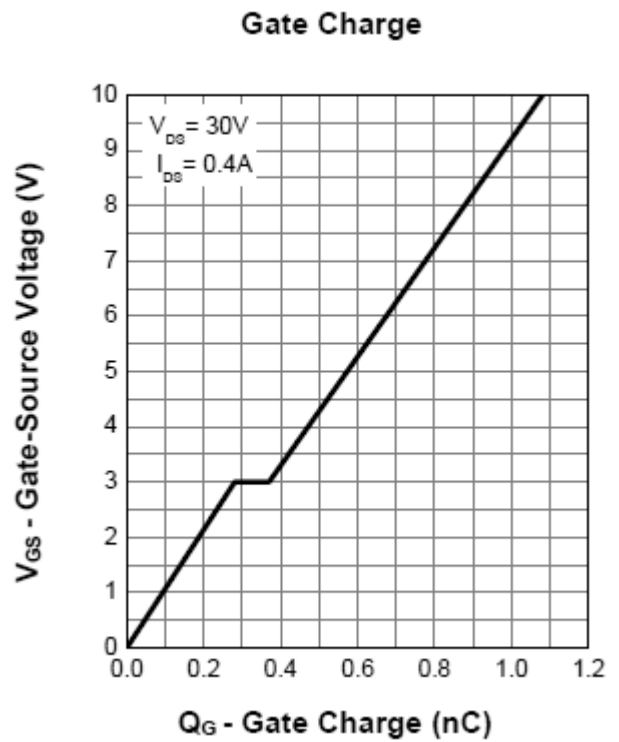
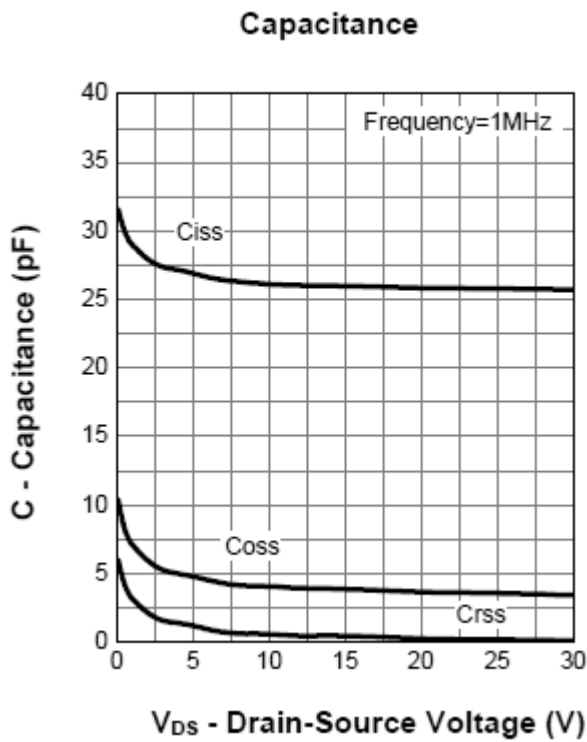
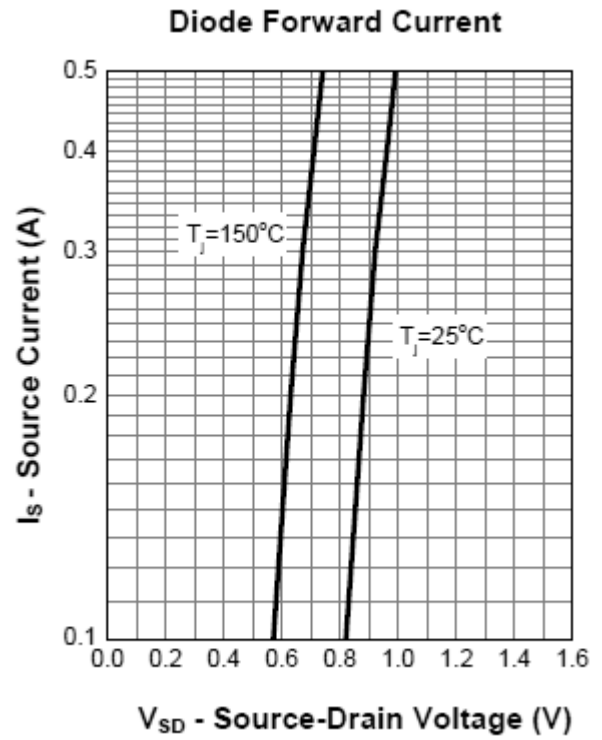
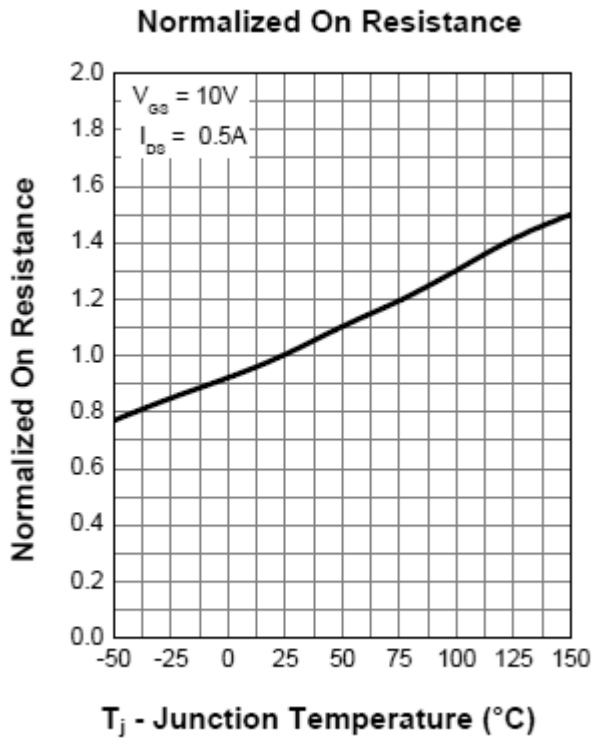
Transfer Characteristics



Normalized Threshold Voltage



Electrical Characteristics Curves



Test Circuits

Fig.1-1 Switching times test circuit

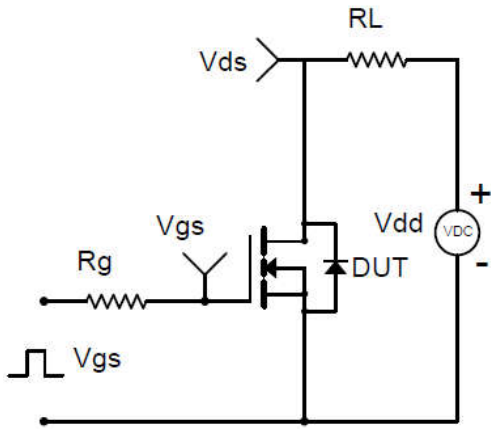


Fig.1-2 Switching Waveform

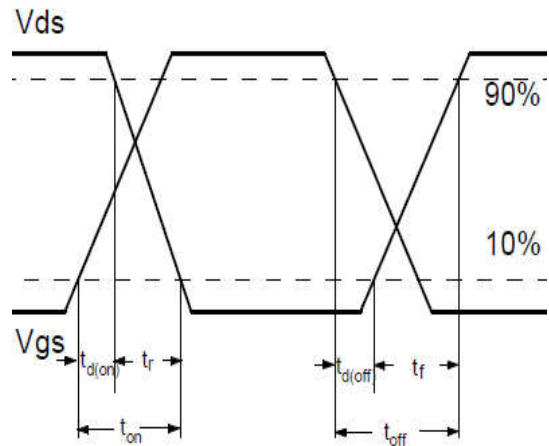


Fig.2-1 Gate charge test circuit

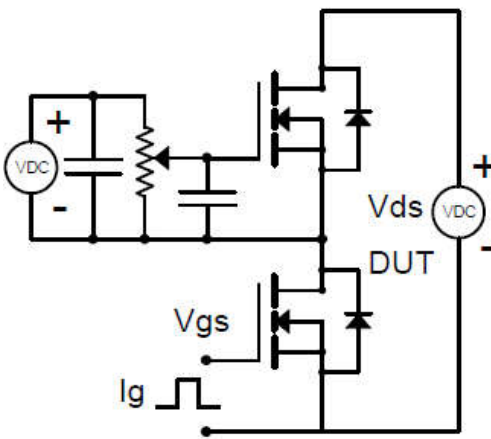
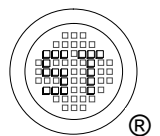
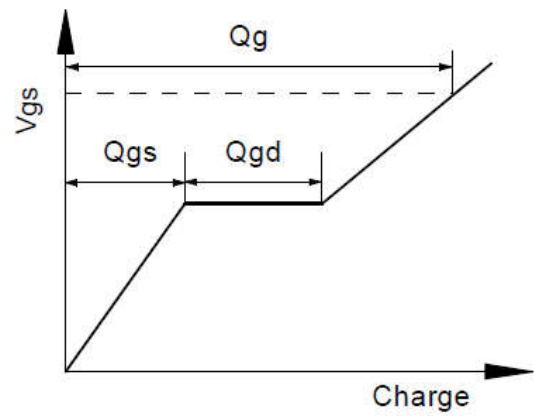


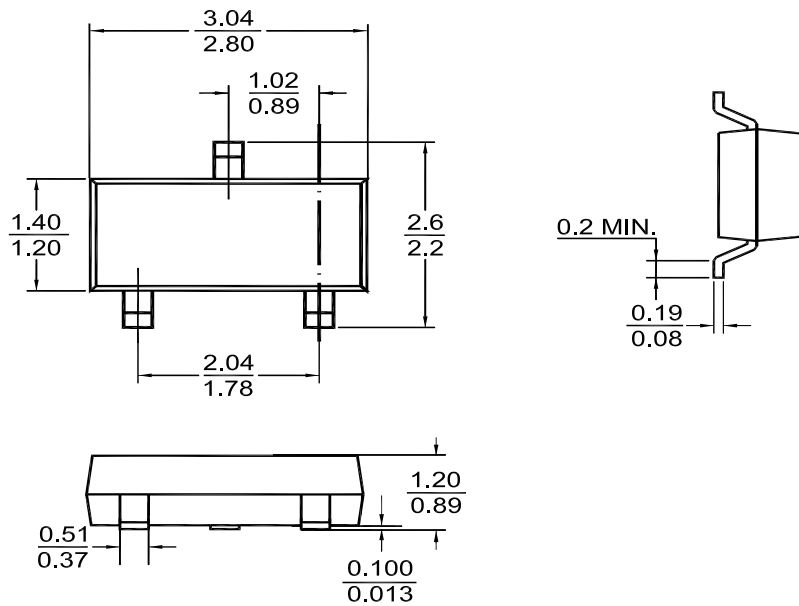
Fig.2-2 Gate charge waveform



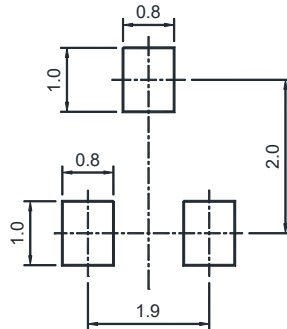
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Package Outline (Dimensions in mm)

SOT-23



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" S72 " = Part No.
 " YM " = Date Code Marking
 " Y " = Year
 " M " = Month
 Font type: Arial

