

# MU06N075L

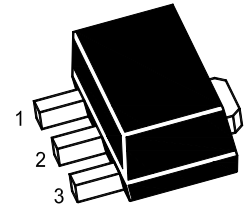
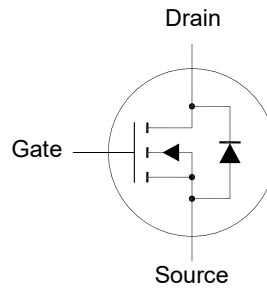
## N-Channel Enhancement Mode MOSFET

### Features

- Advanced trench cell design
- Surface-mounted package

### Applications

- Portable appliances
- Battery management
- High speed switch
- Low power DC to DC



1.Gate 2.Drain 3.Source  
SOT-89 Plastic Package

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

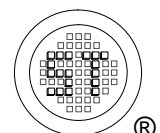
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	4	A
Peak Drain Current, Pulsed <sup>1)</sup>	$I_{DM}$	16	A
Power Dissipation <sup>2)</sup>	$P_D$	1.7	W
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Resistance Ratings

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient <sup>2)</sup>	$R_{\theta JA}$	73.5	$^\circ\text{C/W}$

<sup>1)</sup> Pulse width  $\leq 100 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

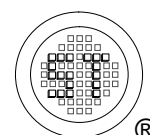
<sup>2)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate,  $t \leq 10$  s.



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

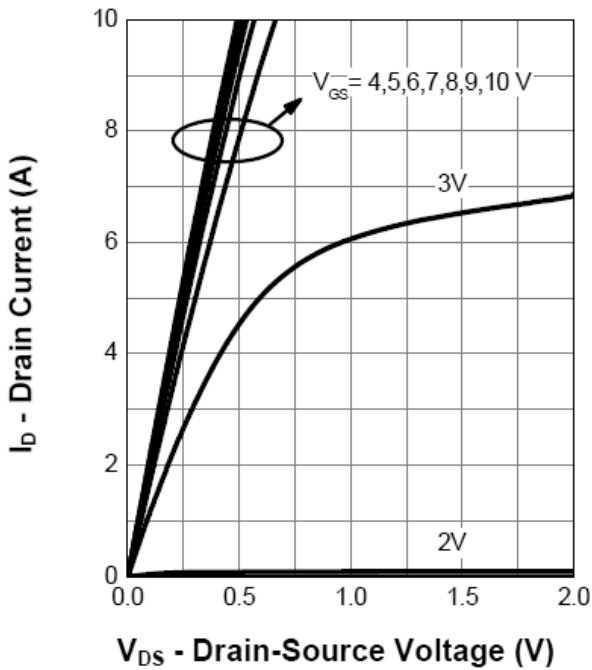
Parameter	Symbol	Min.	Typ.	Max.	Unit
<b>STATIC PARAMETERS</b>					
Drain-Source Breakdown Voltage at $I_D = 250 \mu\text{A}$	$V_{(BR)DSS}$	60	-	-	V
Zero Gate Voltage Drain Current at $V_{DS} = 48 \text{ V}$	$I_{DSS}$	-	-	1	$\mu\text{A}$
Gate-Source Leakage at $V_{GS} = \pm 20 \text{ V}$	$I_{GSS}$	-	-	$\pm 100$	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$ , $I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1	-	2	V
Drain-Source On-State Resistance at $V_{GS} = 10 \text{ V}$ , $I_D = 3 \text{ A}$ at $V_{GS} = 4.5 \text{ V}$ , $I_D = 2 \text{ A}$	$R_{DS(on)}$	- -	- -	60 75	m $\Omega$
<b>DYNAMIC PARAMETERS</b>					
Input Capacitance at $V_{DS} = 30 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$	$C_{iss}$	-	628	-	pF
Output Capacitance at $V_{DS} = 30 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$	$C_{oss}$	-	29	-	pF
Reverse Transfer Capacitance at $V_{DS} = 30 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$	$C_{rss}$	-	28	-	pF
Total Gate Charge at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$	$Q_g$	-	12	-	nC
Gate Source Charge at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$	$Q_{gs}$	-	2.8	-	nC
Gate Drain Charge at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$	$Q_{gd}$	-	1.6	-	nC
Turn-On Delay Time at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_G = 4.5 \Omega$	$t_{d(on)}$	-	10	-	ns
Turn-On Rise Time at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_G = 4.5 \Omega$	$t_r$	-	23	-	ns
Turn-Off Delay Time at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_G = 4.5 \Omega$	$t_{d(off)}$	-	34	-	ns
Turn-Off Fall Time at $V_{DS} = 30 \text{ V}$ , $I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_G = 4.5 \Omega$	$t_f$	-	4.6	-	ns
<b>BODY DIODE PARAMETERS</b>					
Drain-Source Diode Forward Voltage at $V_{GS} = 0 \text{ V}$ , $I_S = 3 \text{ A}$	$V_{SD}$	-	-	1.3	V
Body Diode Reverse Recovery Time at $I_S = 3 \text{ A}$ , $di/dt = 100 \text{ A}/\mu\text{s}$	$t_{rr}$	-	34	-	ns
Body Diode Reverse Recovery Charge at $I_S = 3 \text{ A}$ , $di/dt = 100 \text{ A}/\mu\text{s}$	$Q_{rr}$	-	4.6	-	nC



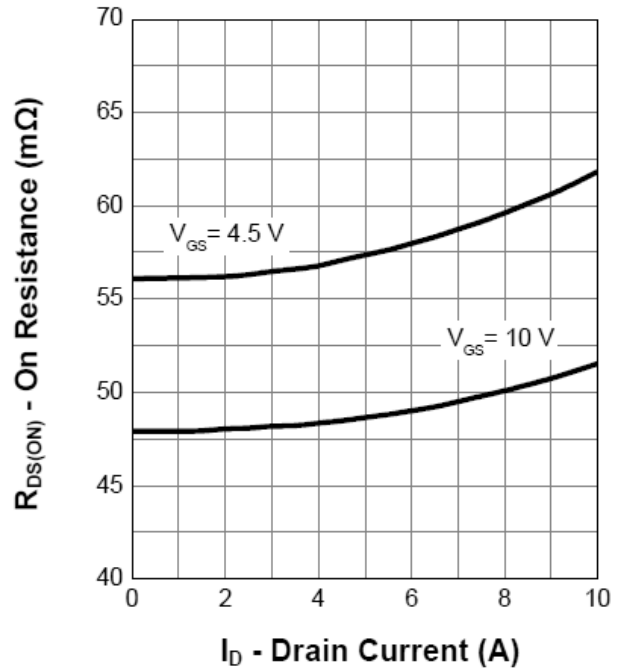
# MU06N075L

## Electrical Characteristics Curves

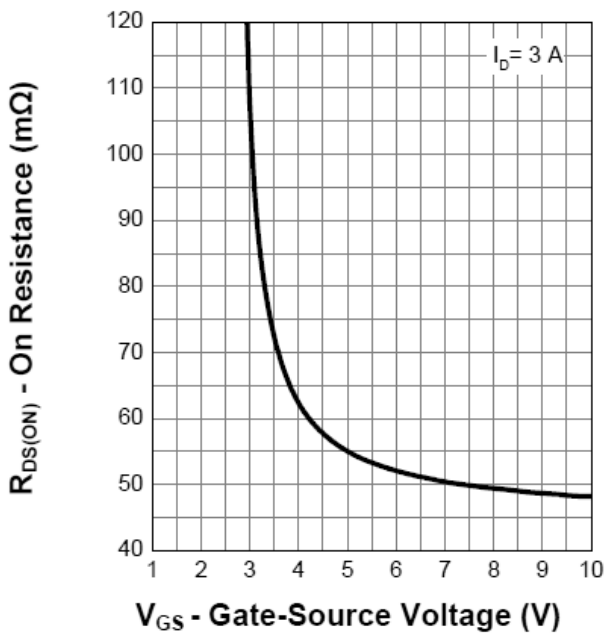
Output Characteristics



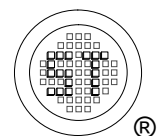
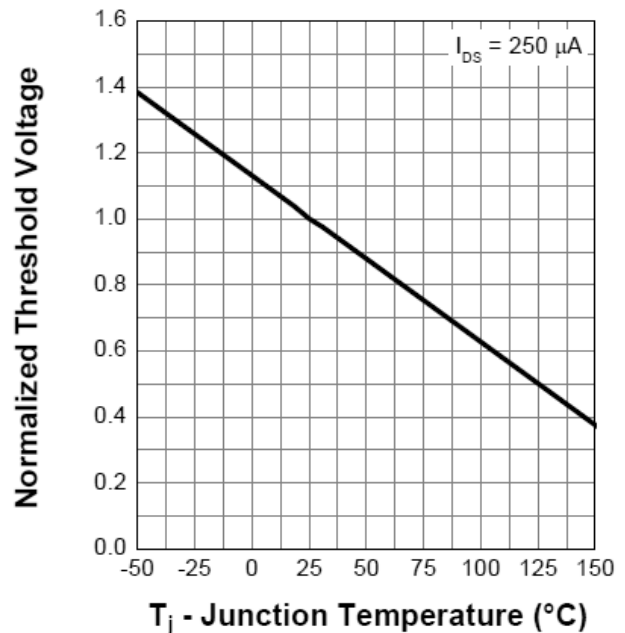
On Resistance



Transfer Characteristics



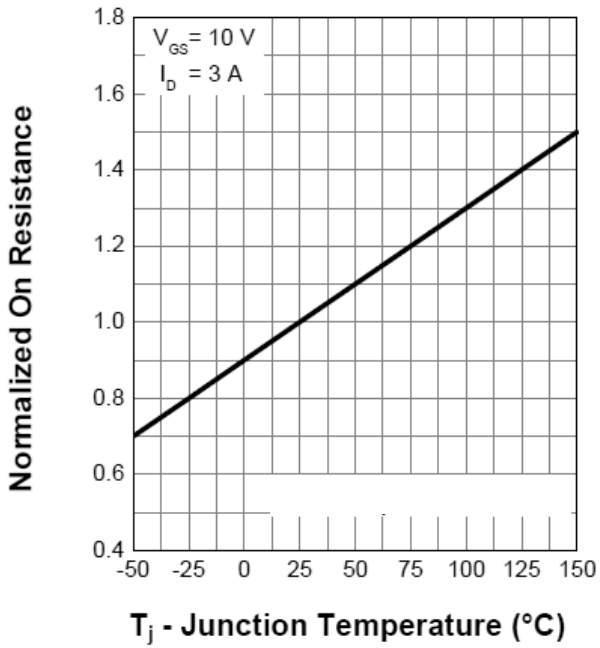
Normalized Threshold Voltage



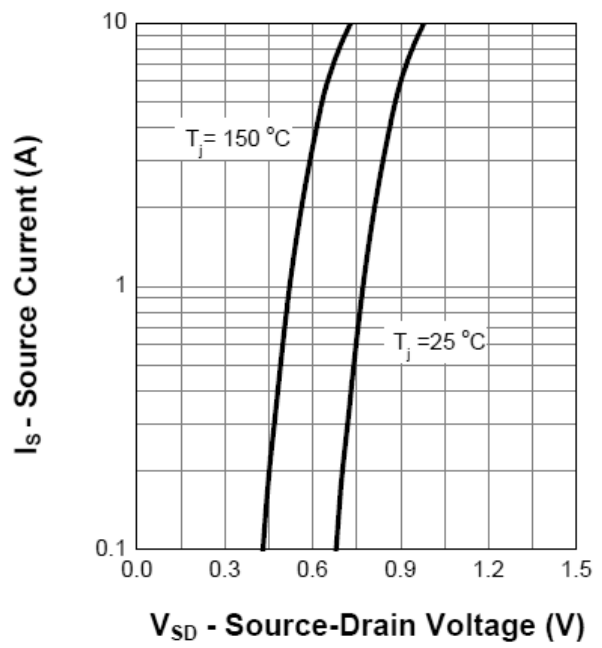
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## Electrical Characteristics Curves

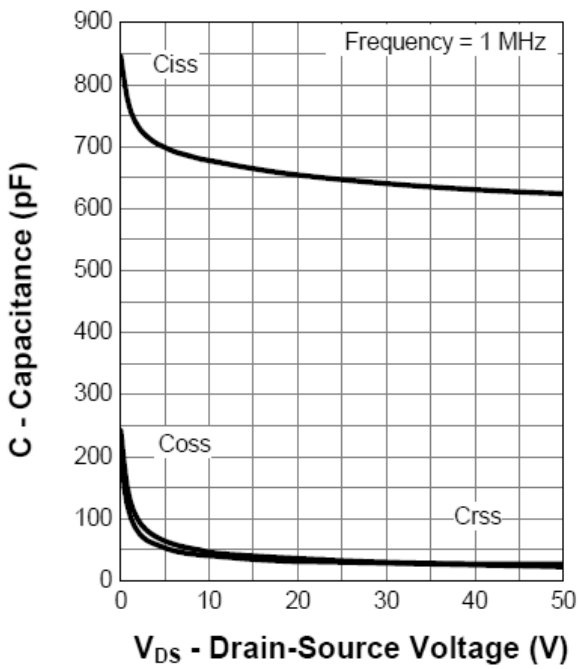
**Normalized On Resistance**



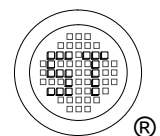
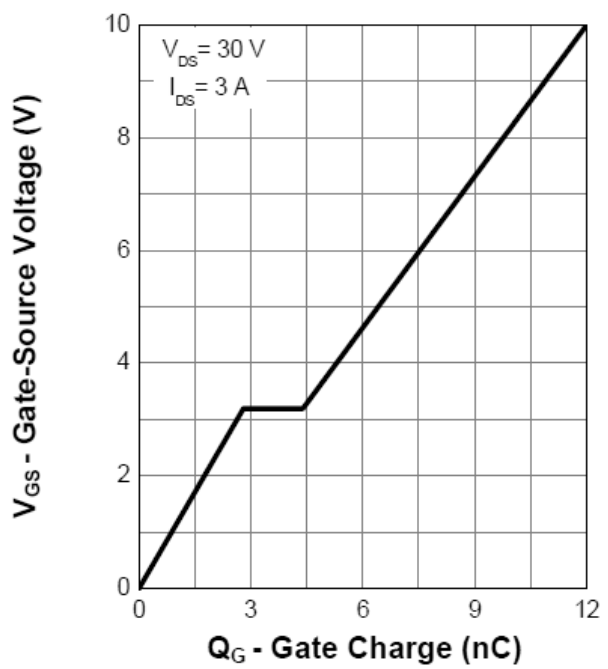
**Diode Forward Current**



**Capacitance**



**Gate Charge**



## Test Circuits

Fig.1-1 Switching times test circuit

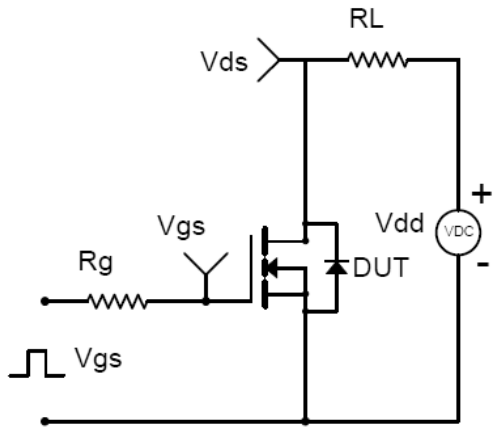


Fig.1-2 Switching Waveform

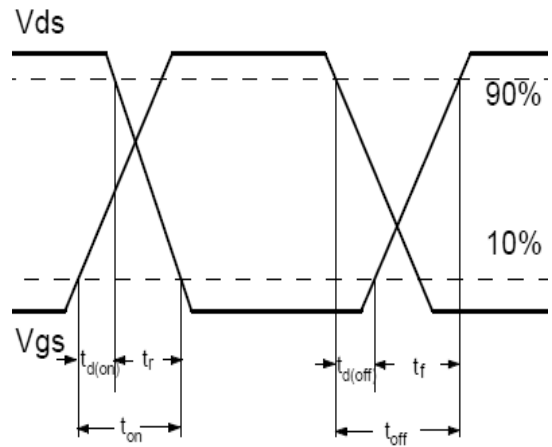


Fig.2-1 Gate charge test circuit

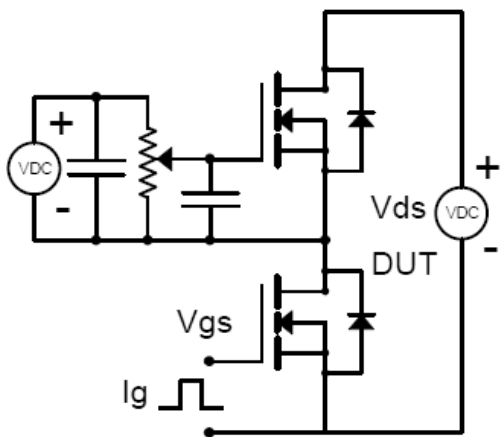
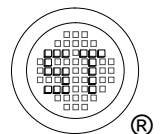
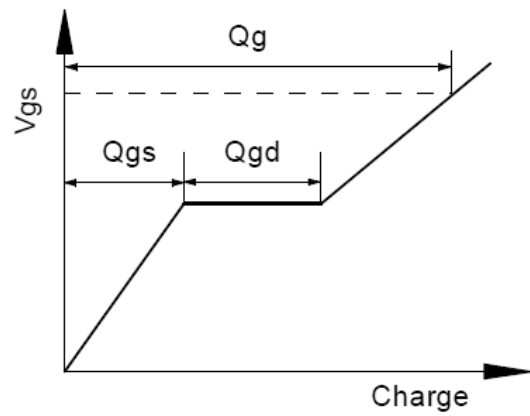


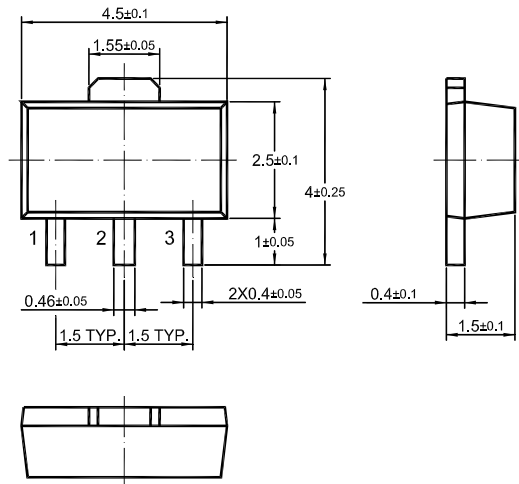
Fig.2-2 Gate charge waveform



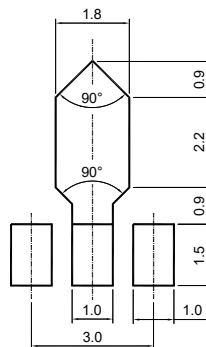
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## Package Outline (Dimensions in mm)

SOT-89



## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-89	12	$8 \pm 0.1$	$0.315 \pm 0.004$	178	7	1,000
				330	13	4,000

## Marking information

" MU06N075L " = Part No.  
 " YM " = Date Code Marking  
 " Y " = Year  
 " M " = Month  
 Font type: Arial

