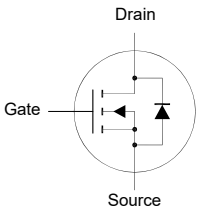
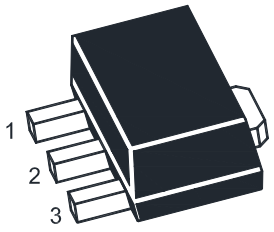
MU03N035LS

N-Channel Enhancement Mode MOSFET





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

Applications

- Motor/Body Load Control
- DC-DC converters

Absolute Maximum Ratings (at T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Drain-Gate Voltage	V_{GS}	± 20	V
Drain Current - Continuous	I_D	8	A
Peak Drain Current, Pulsed [1)]	I_{DM}	35	A
Single Pulsed Avalanche Current	I_{AS}	12	A
Single Pulsed Avalanche Energy [2)]	E_{AS}	7.2	mJ
Total Power Dissipation	P_{tot}	2.3	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance-Junction to Ambient [3)]	$R_{\theta JA}$	55	℃/W

[1)] Pulse Test: Pulse Width ≤ 100 μs, Duty Cycle ≤ 2%,Pulsed width limited by maximum junction temperature.

[2)] starting T_J = 25°C, L = 0.1 mH, R_g = 25 Ω, I_{AS} = 12 A.

[3)] Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

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Characteristics at T_a = 25℃ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at I_D = 250 µA	$V_{(BR)DSS}$	30	-	-	V
Drain-Source Leakage Current at V_{DS} = 24 V	I_{DSS}	-	-	1	µA
Gate-Source Leakage Current at V_{GS} = ± 20 V	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at V_{GS} = V_{DS}, I_D = 250 µA	$V_{GS(th)}$	1.2	1.7	2.5	V
Drain-Source On-State Resistance at V_{GS} = 10 V, I_D = 8 A at V_{GS} = 4.5 V, I_D = 6 A	$R_{DS(on)}$	- -	- -	25 35	mΩ
DYNAMIC PARAMETERS					
Gate Resistance at V_{GS} = 0 V, V_{DS} = 0 V, f = 1 MHz	R_g	-	1	-	Ω
Forward Transconductance at V_{DS} = 5 V, I_D = 6 A	g_{fs}	-	7.6	-	S
Input Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{iss}	-	480	-	pF
Output Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{oss}	-	62	-	pF
Reverse Transfer Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{rss}	-	40	-	pF
Total Gate Charge at V_{DS} = 15 V, I_D = 8 A, V_{GS} = 10 V at V_{DS} = 15 V, I_D = 8 A, V_{GS} = 4.5 V	Q_g	- -	12.7 6	- -	nC
Gate Source Charge at V_{DS} = 15 V, I_D = 8 A, V_{GS} = 10 V	Q_{gs}	-	2	-	nC
Gate Drain Charge at V_{DS} = 15 V, I_D = 8 A, V_{GS} = 10 V	Q_{gd}	-	3	-	nC
Turn-On Delay Time at V_{DD} = 15 V, V_{GS} = 10 V, I_D = 1.5 A, R_g = 1 Ω	$t_{d(on)}$	-	8.5	-	nS
Turn-On Rise Time at V_{DD} = 15 V, V_{GS} = 10 V, I_D = 1.5 A, R_g = 1 Ω	t_r	-	3.6	-	nS
Turn-Off Delay Time at V_{DD} = 15 V, V_{GS} = 10 V, I_D = 1.5 A, R_g = 1 Ω	$t_{d(off)}$	-	10	-	nS
Turn-Off Fall Time at V_{DD} = 15 V, V_{GS} = 10 V, I_D = 1.5 A, R_g = 1 Ω	t_f	-	21	-	nS
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S = 1 A, V_{GS} = 0 V	V_{SD}	-	-	1	V
Body-Diode Continuous Current	I_S	-	-	8	A
Body Diode Reverse Recovery Time at I_S = 8 A, V_{DD} = 15 V, di/dt = 100 A / µs	t_{rr}	-	6.3	-	nS
Body Diode Reverse Recovery Charge at I_S = 8 A, V_{DD} = 15 V, di/dt = 100 A / µs	Q_{rr}	-	1.4	-	nC

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

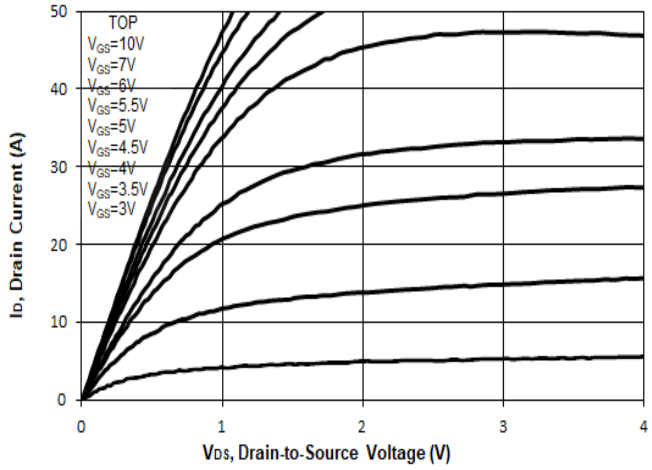


Fig. 2 Typical Transfer Characteristic

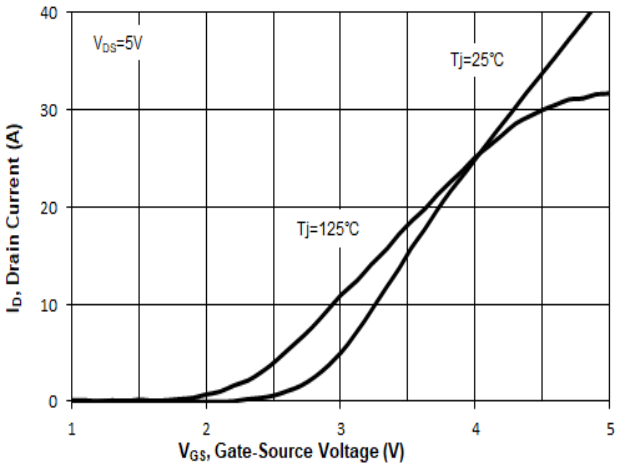


Fig. 3 on-Resistance vs Drain Current

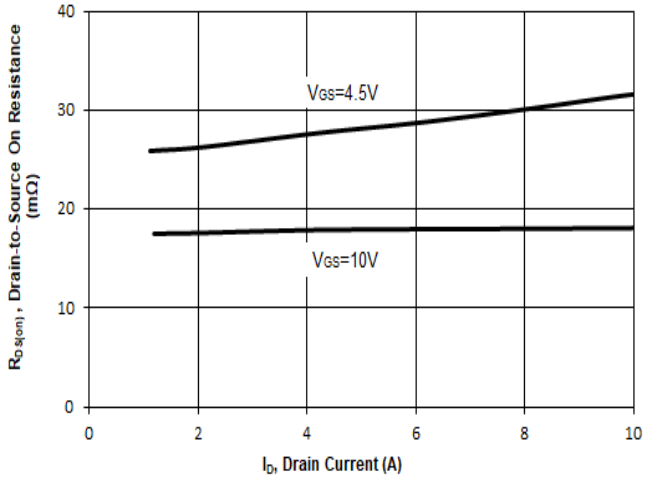


Fig. 4 on-Resistance vs. Gate Voltage

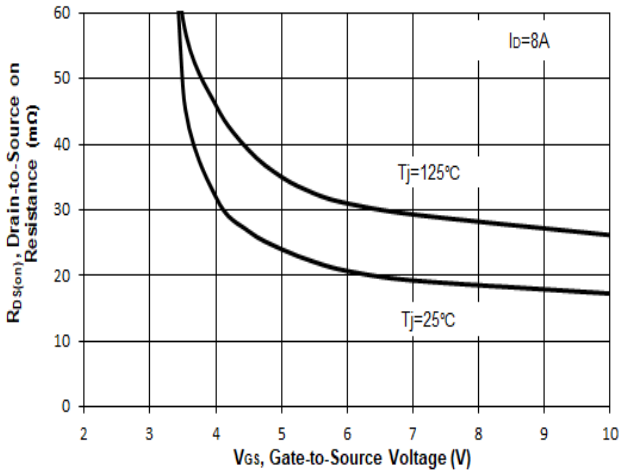


Fig. 5 on-Resistance vs.T_j

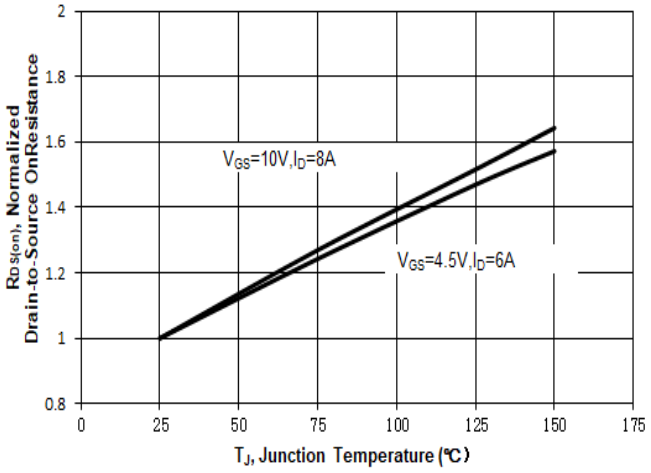
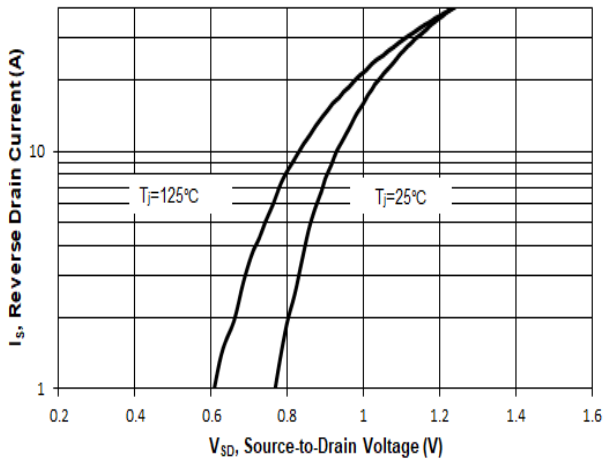


Fig. 6 Body Diodes Forward Characteristic



Electrical Characteristics Curves

Fig. 7 Typical Junction Capacitance

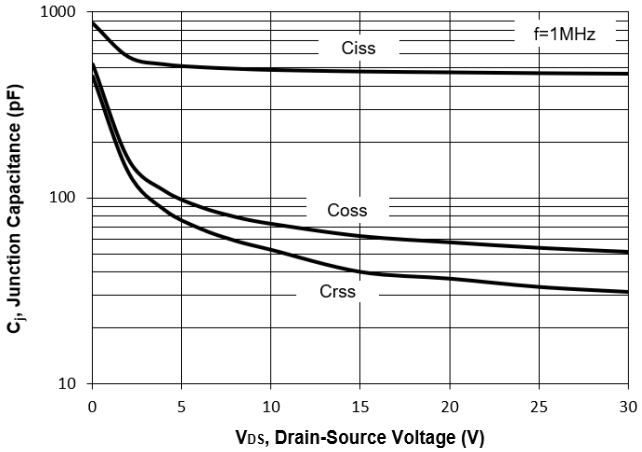


Fig. 8 Drain-Source Leakage Current vs. T_j

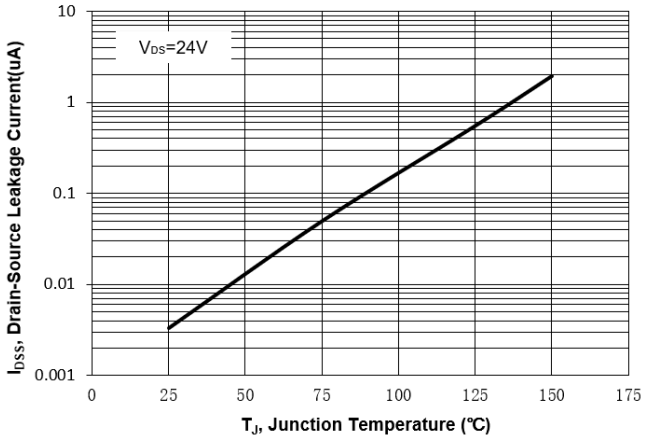


Fig. 9 $V_{(BR)DSS}$ vs. Junction Temperature

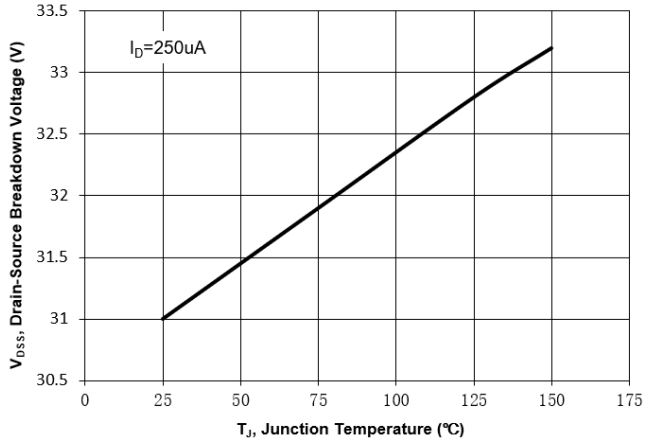


Fig. 10 Gate Threshold Variation vs. T_j

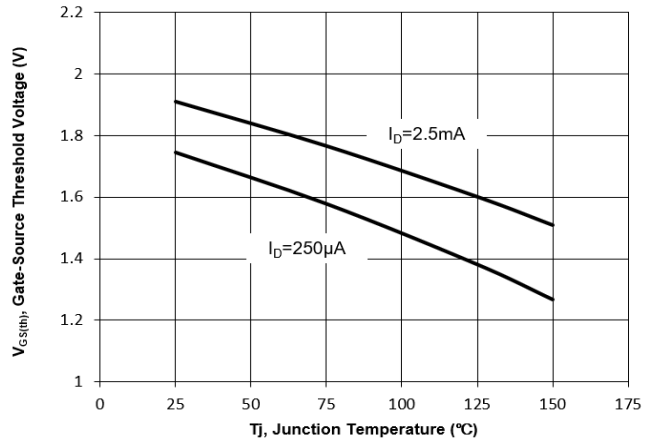
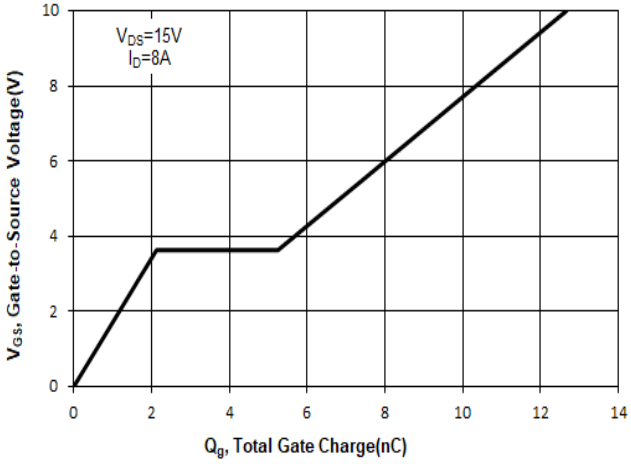


Fig. 11 Gate Charge



Test Circuits

Fig.1-1 Switching times test circuit

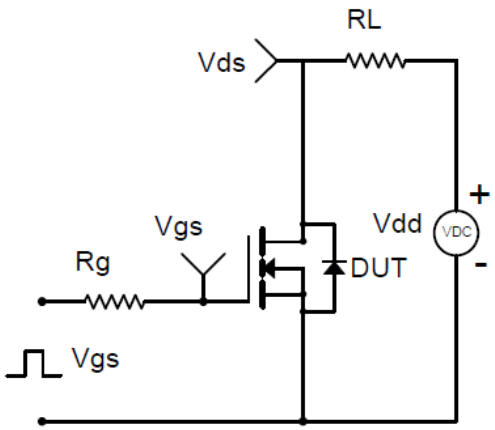


Fig.1-2 Switching Waveform

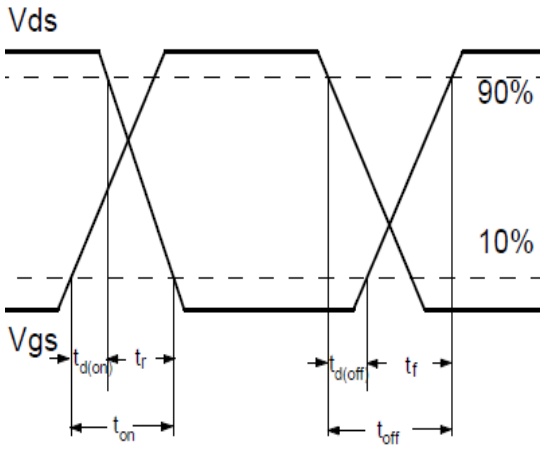


Fig.2-1 Gate charge test circuit

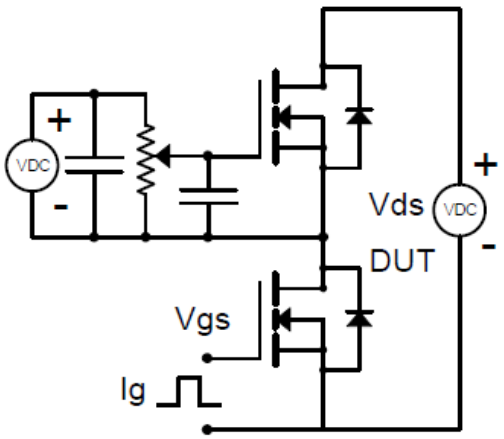


Fig.2-2 Gate charge waveform

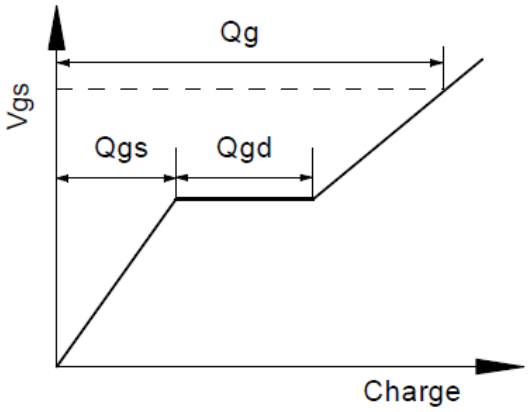


Fig.3-1 Avalanche test circuit

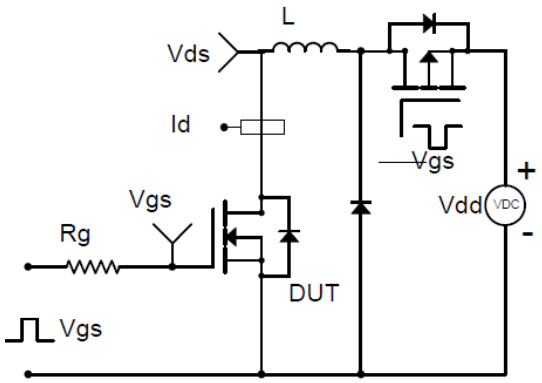
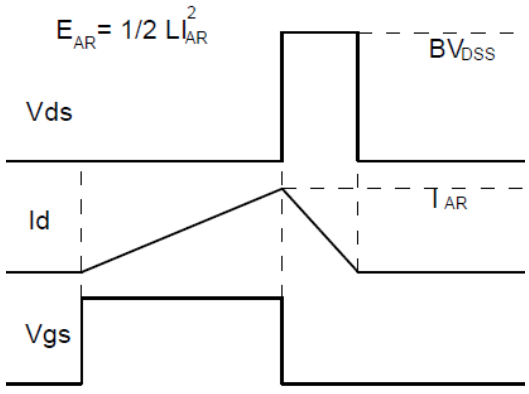


Fig.3-2 Avalanche waveform



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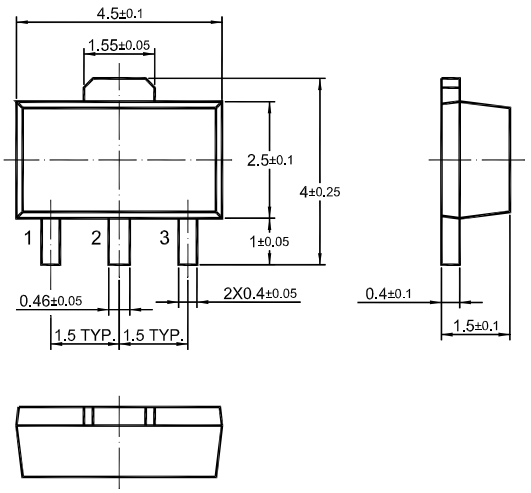
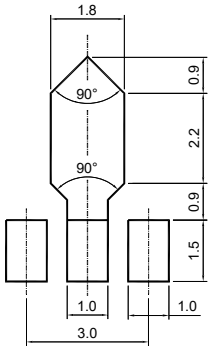
Package Outline (Dimensions in mm) SOT-89



Recommended Soldering Footprint

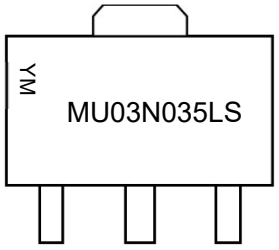


Packing information

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

Marking information

" MU03N035LS " = Part No.
"YM" = Date Code Marking
"Y" = Year
"M" = Month
Font type: Arial



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