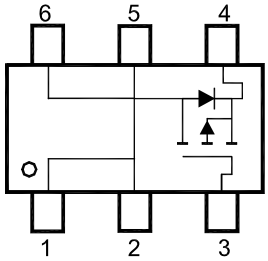
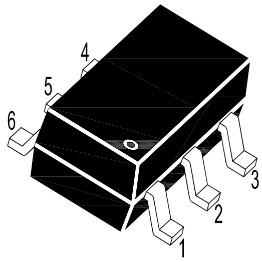
MD10P380LS

P-Channel Enhancement Mode MOSFET

Features
• Surface-mounted package

Applications
• Battery protection
• Load switch
• Uninterruptible power supply





1. Drain 2. Drain 3. Gate
4. Source 5. Drain 6. Drain
SOT-26 Plastic Package

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$-I_D$	1.6	A
Pulsed Drain Current [1)]	$-I_{DM}$	9	A
Total Power Dissipation [2)]	P_{tot}	1	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	℃

Thermal Resistance Ratings

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [2)]	$R_{\theta JA}$	125	℃/W

[1)] Pulse Test: Pulse Width ≤ 100 μs, Duty Cycle ≤ 2%,Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
[2)] Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Dated: 04/03/2024 Rev:02

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	$-V_{(BR)DSS}$	100	-	-	V
Zero Gate Voltage Drain Current at $-V_{DS}$ = 80 V	$-I_{DSS}$	-	-	1	µA
Gate-Source Leakage at V_{GS} = ± 20 V	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at V_{DS} = V_{GS}, $-I_D$ = 250 µA	$-V_{GS(th)}$	1.2	-	2.3	V
Drain-Source On-State Resistance at $-V_{GS}$ = 10 V, $-I_D$ = 1 A at $-V_{GS}$ = 4.5 V, $-I_D$ = 0.5 A	$R_{DS(on)}$	- -	- -	325 380	mΩ
DYNAMIC PARAMETERS					
Gate resistance at V_{DS} = 0 V, V_{GS} = 0 V, f = 1 MHz	R_g	-	7.1	-	Ω
Forward Transconductance at $-V_{DS}$ = 5 V, $-I_D$ = 1.6 A	g_{fs}	-	8	-	S
Input Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 50 V, f = 1 MHz	C_{iss}	-	1046	-	pF
Output Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 50 V, f = 1 MHz	C_{oss}	-	29	-	pF
Reverse Transfer Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 50 V, f = 1 MHz	C_{rss}	-	25	-	pF
Total Gate Charge at $-V_{GS}$ = 10 V, $-V_{DS}$ = 50 V, $-I_D$ = 1.6 A at $-V_{GS}$ = 4.5 V, $-V_{DS}$ = 50 V, $-I_D$ = 1.6 A	Q_g	- -	16 7	- -	nC
Gate to Source Charge at $-V_{GS}$ = 10 V, $-V_{DS}$ = 50 V, $-I_D$ = 1.6 A	Q_{gs}	-	4	-	nC
Gate to Drain Charge at $-V_{GS}$ = 10 V, $-V_{DS}$ = 50 V, $-I_D$ = 1.6 A	Q_{gd}	-	2	-	nC
Turn-On Delay Time at $-V_{GS}$ = 10 V, $-V_{DD}$ = 50 V, $-I_D$ = 1.6 A, R_g = 3.3 Ω	$t_{d(on)}$	-	8	-	ns
Turn-On Rise Time at $-V_{GS}$ = 10 V, $-V_{DD}$ = 50 V, $-I_D$ = 1.6 A, R_g = 3.3 Ω	t_r	-	4	-	ns
Turn-Off Delay Time at $-V_{GS}$ = 10 V, $-V_{DD}$ = 50 V, $-I_D$ = 1.6 A, R_g = 3.3 Ω	$t_{d(off)}$	-	12	-	ns
Turn-Off Fall Time at $-V_{GS}$ = 10 V, $-V_{DD}$ = 50 V, $-I_D$ = 1.6 A, R_g = 3.3 Ω	t_f	-	4	-	ns
Body-Diode PARAMETERS					
Body Diode Voltage at $-I_S$ = 1 A	$-V_{SD}$	-	-	1.2	V
Body-Diode Continuous Current	$-I_S$	-	-	1.6	A

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristics

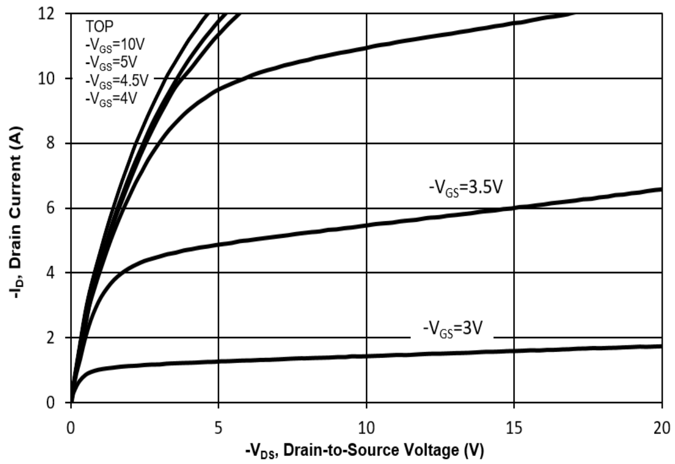


Fig. 2 Typical Transfer Characteristics

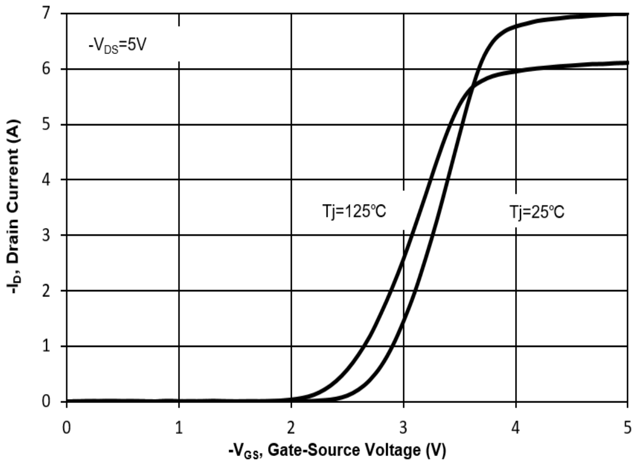


Fig. 3 On-Resistance vs. Drain Current

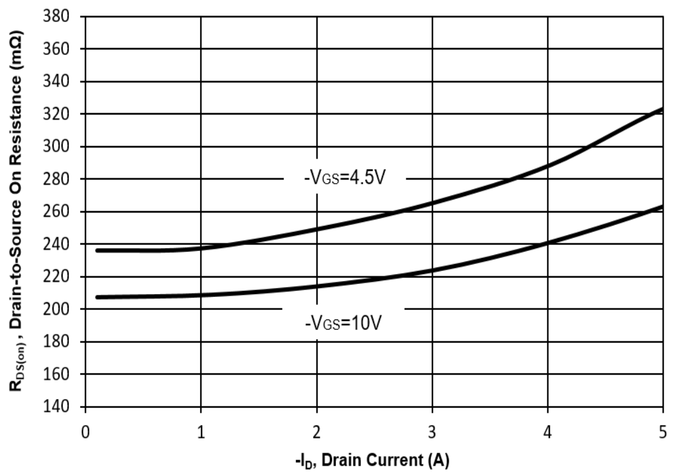


Fig. 4 On-Resistance vs. Gate-Source Voltage

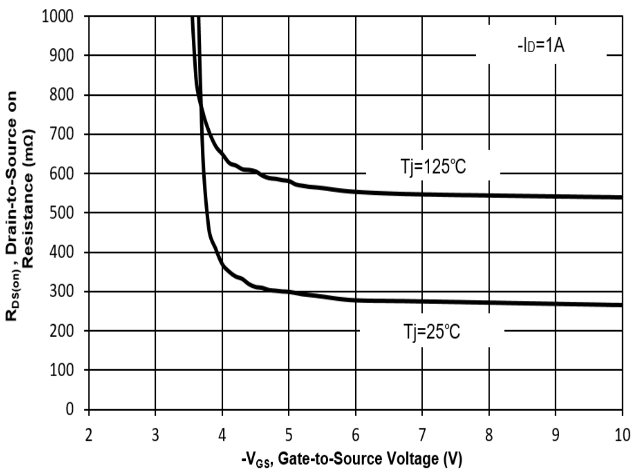


Fig. 5 On-Resistance vs.T_j

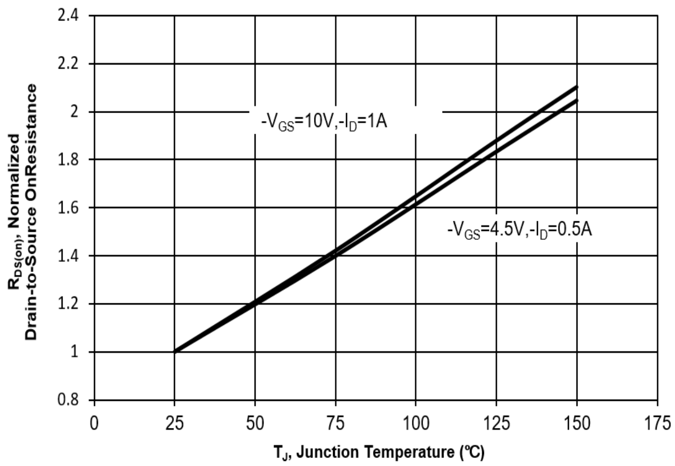
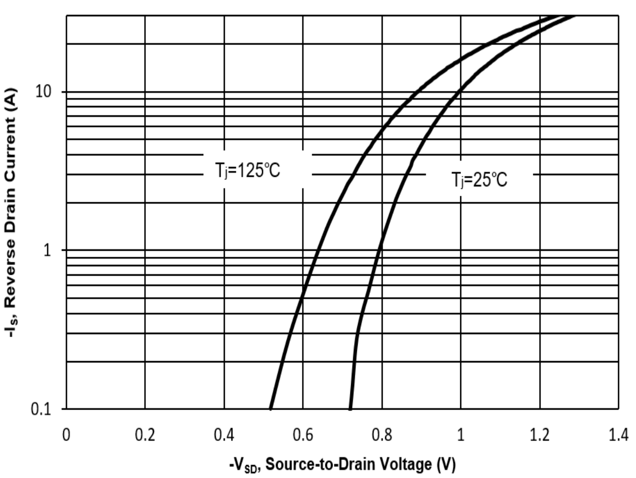


Fig. 6 Typical Body-Diode Forward Characteristics



Electrical Characteristics Curves

Fig. 7 Typical Junction Capacitance

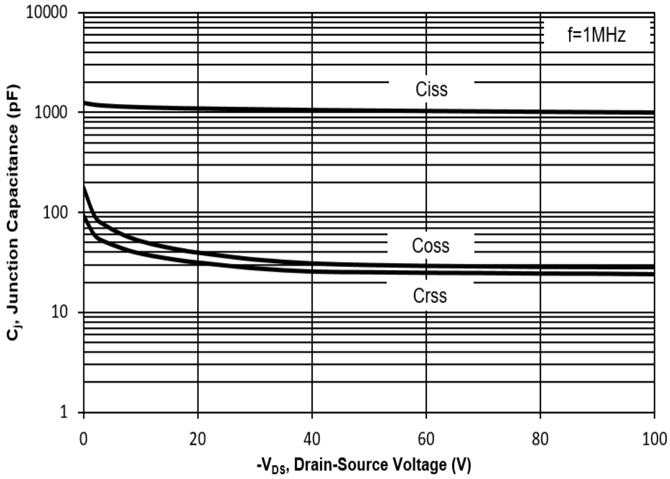


Fig. 8 Drain-Source Leakage Current vs. T_j

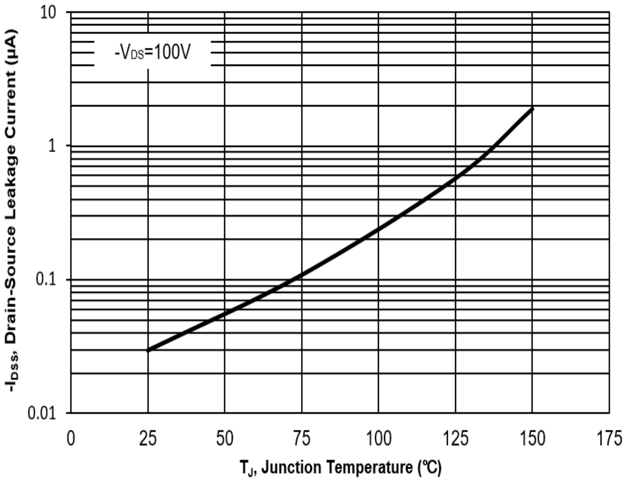


Fig. 9 $V_{(BR)DSS}$ vs. Junction Temperature

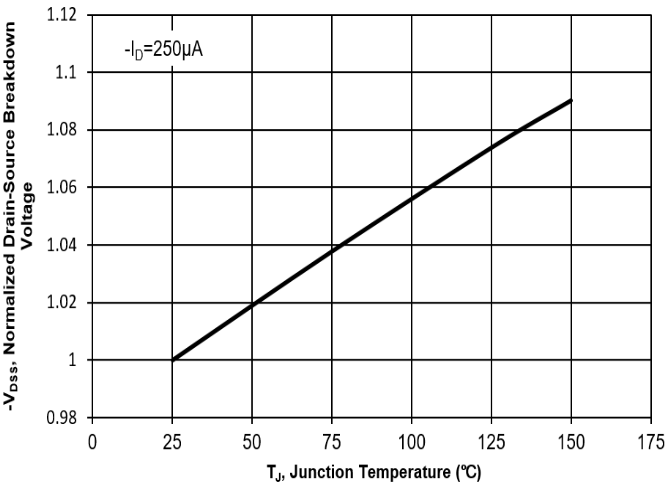


Fig. 10 Gate Threshold Variation vs. T_j

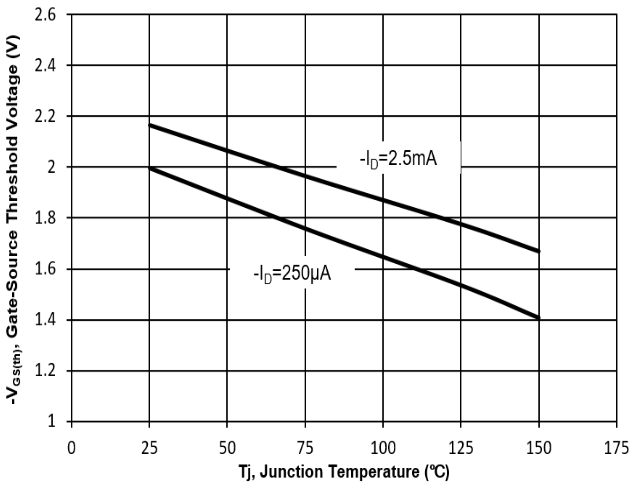
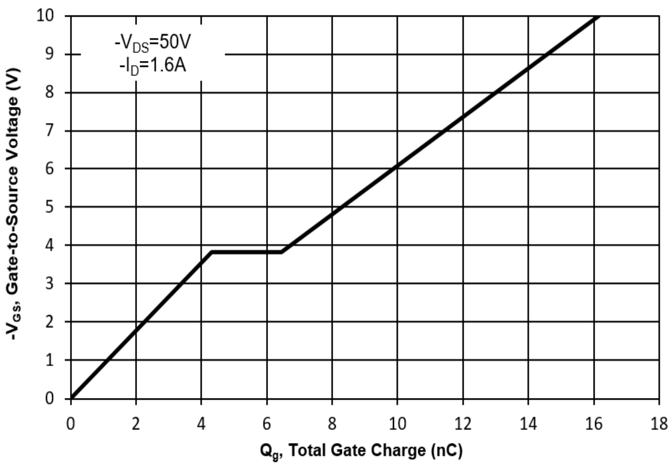


Fig. 11 Gate Charge



Test Circuits

Fig.1-1 Switching times test circuit

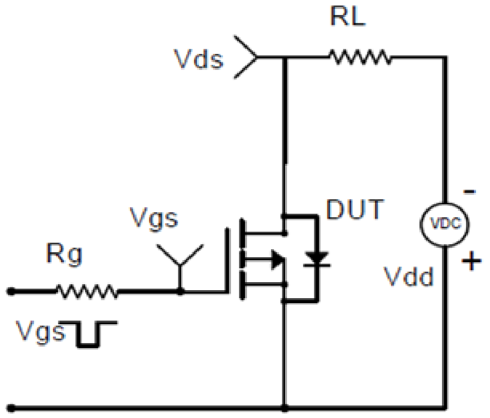


Fig.1-2 Switching Waveform

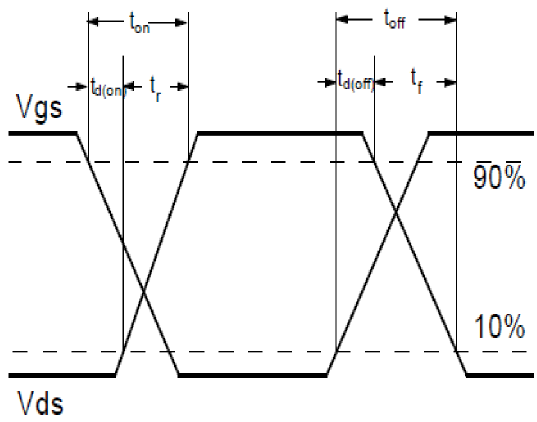


Fig.2-1 Gate charge test circuit

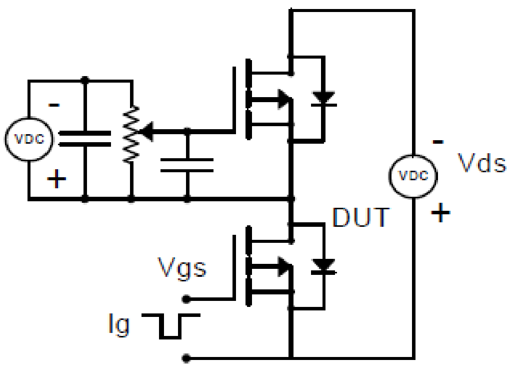
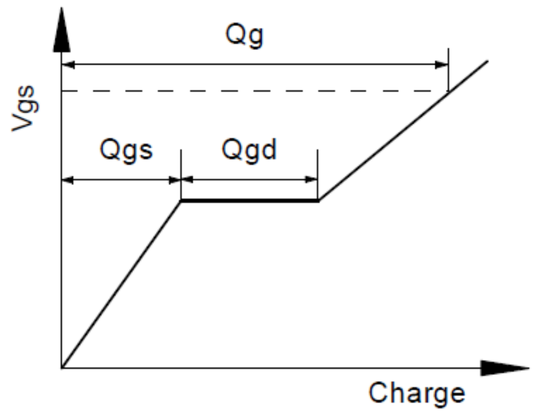
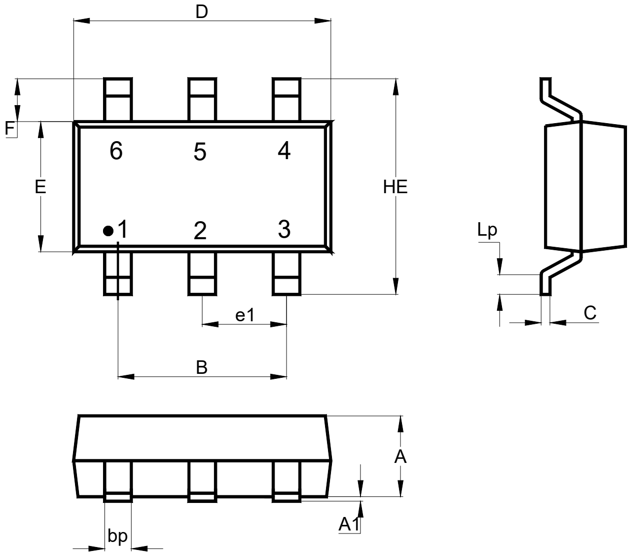


Fig.2-2 Gate charge waveform

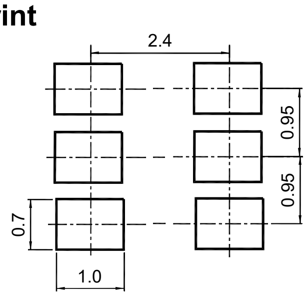


Package Outline (Dimensions in mm) SOT-26



Unit	A	A1	B	C	D	E	e1	F	HE	Lp	bp
mm	1.2 1.0	0.1 0	2.1 1.7	0.20 0.08	3.1 2.7	1.7 1.3	0.95 typ.	0.65 0.6	3.0 2.6	0.6 0.2	0.5 0.3

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-26	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

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