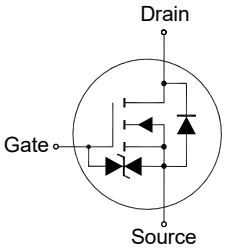
MMFTN3008KE

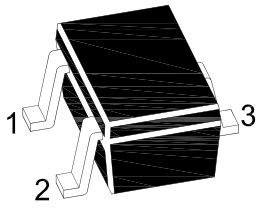
N-Channel Enhancement Mode MOSFET

Features

- Surface-mounted package
- Built-in G-S Protection Diode
- 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-523 Plastic Package

Applications

- Portable appliances
- Battery management

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	350	mA
Pulsed Drain Current [1]	I_{DM}	1.4	A
Total Power Dissipation [2]	P_{tot}	200	mW
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	625	℃/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 minimum recommended pad layout.

Dated: 29/12/2023 Rev:01

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
Zero Gate Voltage Drain Current at V_{DS} = 30 V	I_{DSS}	-	-	1	µA
Gate-Source Leakage at V_{GS} = ± 8 V	I_{GSS}	-	-	± 1	µA
Gate-Source Threshold Voltage at V_{DS} = V_{GS}, I_D = 250 µA	$V_{GS(th)}$	0.4	-	1	V
Drain-Source On-State Resistance at V_{GS} = 4.5 V, I_D = 350 mA at V_{GS} = 2.5 V, I_D = 200 mA at V_{GS} = 1.8 V, I_D = 10 mA	$R_{DS(on)}$	- - -	- - -	1.4 2.1 2.8	Ω
DYNAMIC PARAMETERS					
Forward Transconductance at V_{DS} = 4.5 V, I_D = 350 mA	g_{fs}	-	1.1	-	S
Input Capacitance at V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	C_{iss}	-	54	-	pF
Output Capacitance at V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	C_{oss}	-	9.4	-	pF
Reverse Transfer Capacitance at V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz	C_{rss}	-	4.4	-	pF
Gate charge total at V_{DS} = 15 V, I_D = 0.5 A, V_{GS} = 4.5 V at V_{DS} = 15 V, I_D = 0.5 A, V_{GS} = 2.5 V	Q_g	- -	0.8 0.42	- -	nC
Gate to Source Charge at V_{DS} = 15 V, I_D = 0.5 A, V_{GS} = 4.5 V	Q_{gs}	-	0.2	-	nC
Gate to Drain Charge at V_{DS} = 15 V, I_D = 0.5 A, V_{GS} = 4.5 V	Q_{gd}	-	0.08	-	nC
Turn-On Delay Time at V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 0.5 A, R_G = 4.7 Ω	$t_{d(on)}$	-	1.8	-	ns
Turn-On Rise Time at V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 0.5 A, R_G = 4.7 Ω	t_r	-	18	-	ns
Turn-Off Delay Time at V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 0.5 A, R_G = 4.7 Ω	$t_{d(off)}$	-	29	-	ns
Turn-Off Fall Time at V_{DS} = 15 V, V_{GS} = 4.5 V, I_D = 0.5 A, R_G = 4.7 Ω	t_f	-	22	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S = 350 mA	V_{SD}	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	350	mA

Electrical characteristics curves

Fig. 1 Typical Output Characteristics

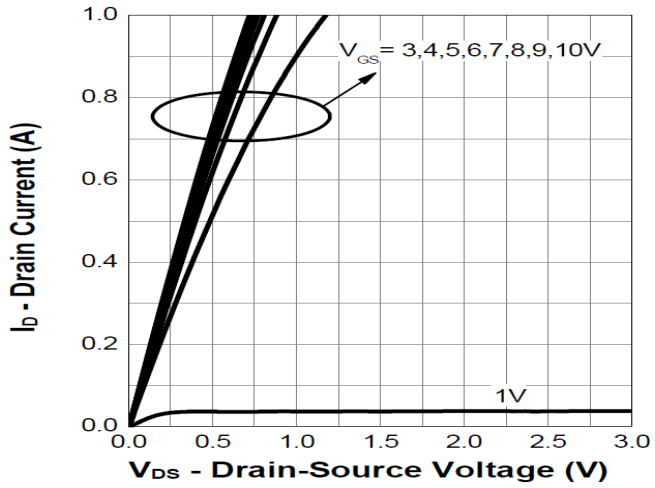


Fig. 2 Gate Threshold Variation vs. T_j

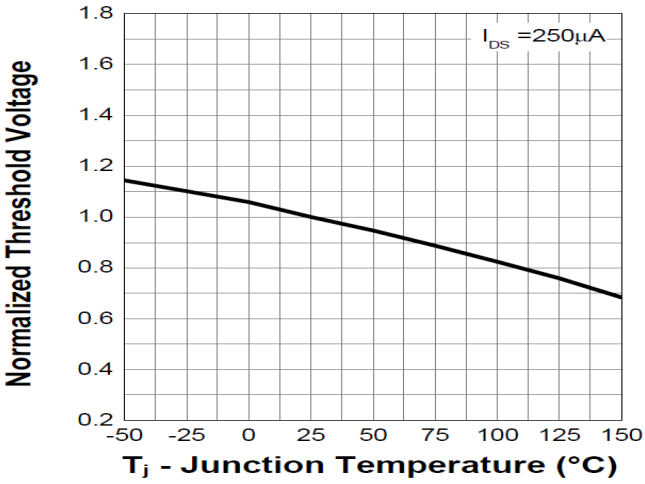


Fig. 3 on-Resistance vs. Drain Current

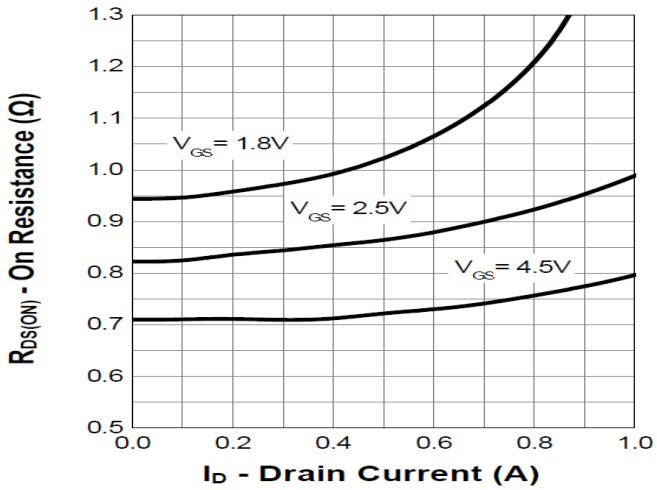


Fig. 4 on-Resistance vs. Gate-Source Voltage

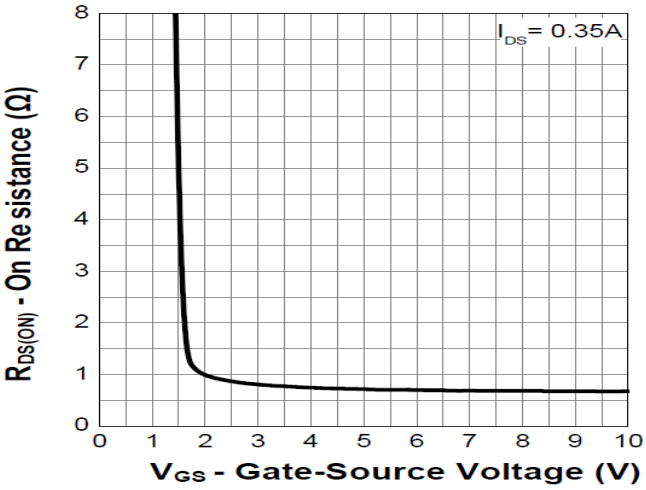


Fig. 5 on-Resistance vs.T_j

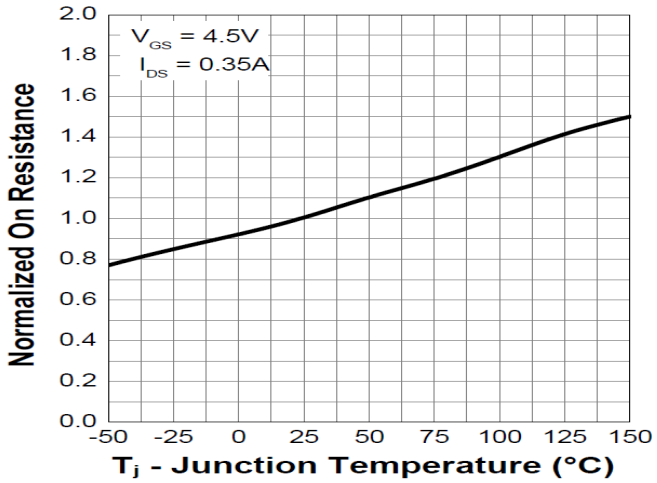
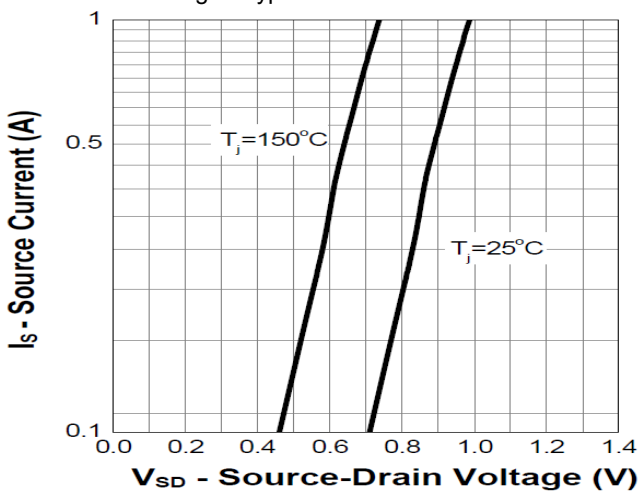


Fig. 6 Typical Forward Characteristics



Electrical characteristics curves

Fig. 7 Typical Junction Capacitance

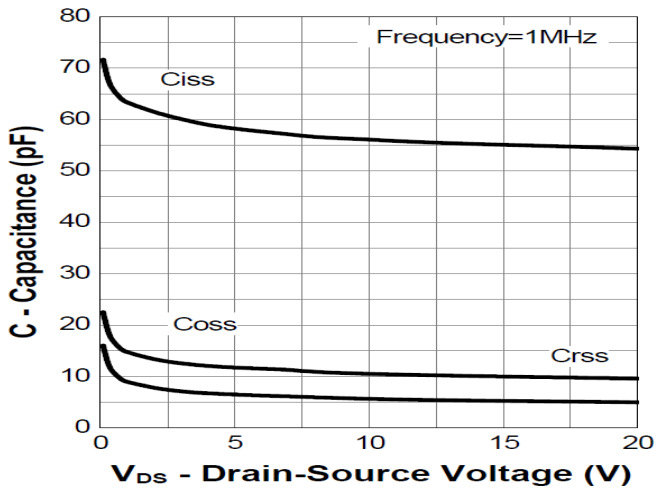
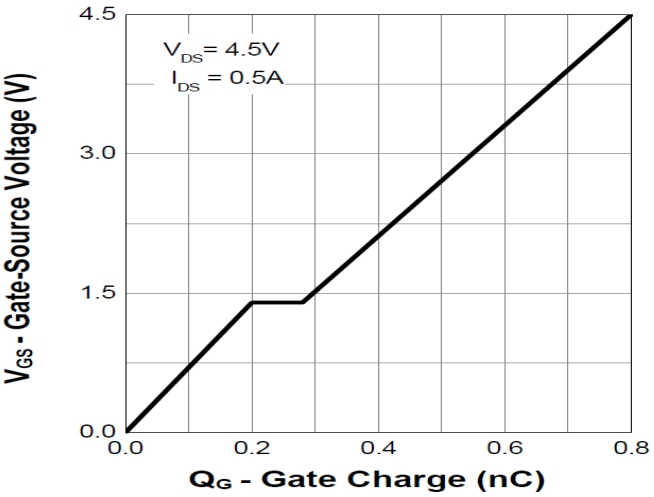


Fig. 8 Gate Charge



Test Circuits

Fig.1-1 Switching times test circuit

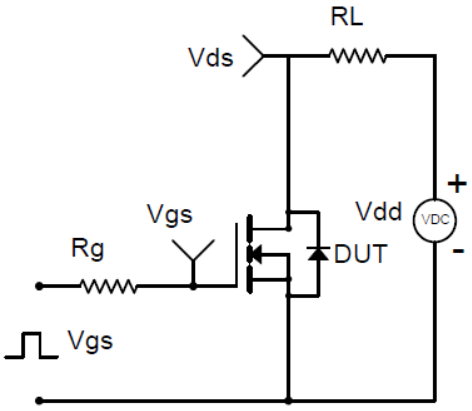


Fig.1-2 Switching Waveform

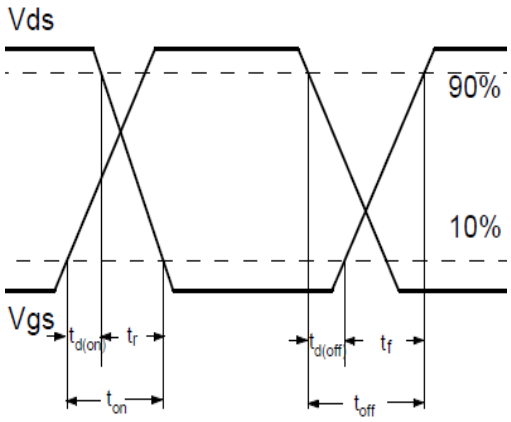


Fig.2-1 Gate charge test circuit

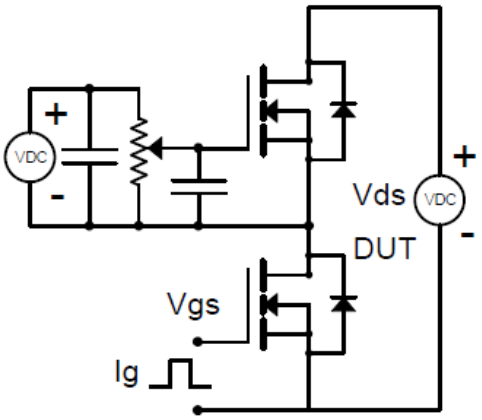
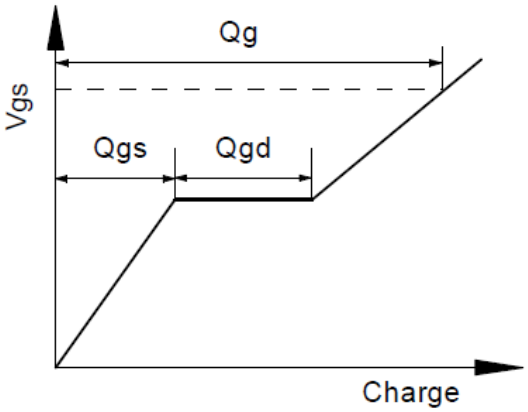
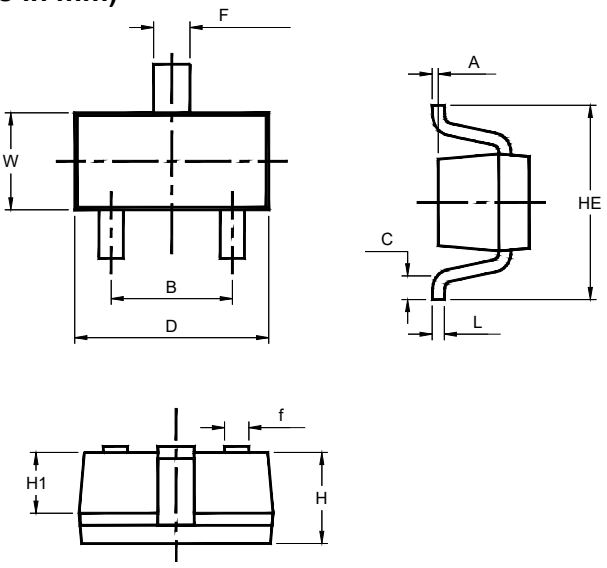


Fig.2-2 Gate charge waveform

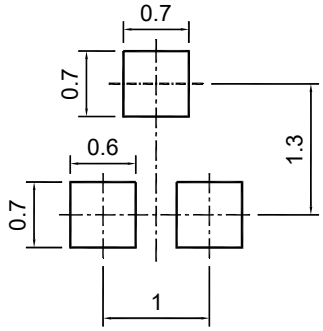


Package Outline (Dimensions in mm) SOT-523



UNIT	A	B	C	D	H	H1	HE	F	f	L	W
mm	0.1 MAX.	1.05 0.95	0.17 MIN.	1.7 1.5	0.85 0.65	0.6 0.4	1.7 1.5	0.35 0.25	0.25 0.15	0.15 0.05	0.9 0.7

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-523	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

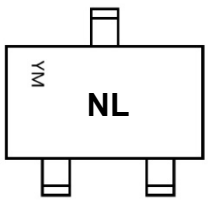
" NL " = Part No.

" YM " = Date Code Marking

" Y " = Year

" M " = Month

Font type: Arial



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