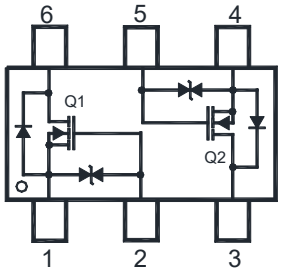
MMFTN3008KDE-AH

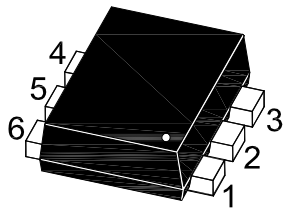
Dual N-Channel Enhancement Mode MOSFET

Features

- AEC-Q101 is Qualified
- Low threshold voltage
- Halogen and Antimony Free(HAF), RoHS compliant
- 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





Q1: 1.Source 2.Gate 6.Drain
Q2: 4.Source 5.Gate 3.Drain
SOT-563 Plastic Package

Applications

- Portable appliances

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current at V_{GS} = 4.5 V	T_a = 25℃ T_a = 100℃	I_D	350 230	mA
Peak Drain Current, Pulsed [1]		I_{DM}	1.4	A
Power Dissipation		P_D	400	mW
Operating Junction Temperature		T_j	- 55 to + 150	℃
Storage Temperature Range		T_{stg}	- 55 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	313	℃/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, with minimum recommended pad layout.

Dated: 19/11/2020 IMC7 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
Drain-Source Leakage Current at V_{DS} = 24 V	I_{DSS}	-	-	1	µA
Gate-Source Leakage at V_{GS} = ± 12 V	I_{GSS}	-	-	± 5	µA
Gate-Source Threshold Voltage at V_{DS} = V_{GS}, I_D = 250 µA	$V_{GS(th)}$	0.6	-	1.1	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 3	Ω
DYNAMIC PARAMETERS					
Forward Transconductance at V_{DS} = 10 V, I_D = 350 mA	g_{fs}	-	650	-	mS
Input Capacitance at V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	C_{iss}	-	31	-	pF
Output Capacitance at V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	C_{oss}	-	10	-	pF
Reverse Transfer Capacitance at V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	C_{rss}	-	7.5	-	pF
Total Gate Charge at V_{DS} = 25 V, I_D = 1 A , V_{GS} = 10 V at V_{DS} = 25 V, I_D = 1 A , V_{GS} = 4.5 V	Q_g	- -	1.3 0.8	- -	nC
Gate Source Charge at V_{DS} = 25 V, I_D = 1 A , V_{GS} = 10 V	Q_{gs}	-	0.5	-	nC
Gate Drain Charge at V_{DS} = 25 V, I_D = 1 A , V_{GS} = 10 V	Q_{gd}	-	0.4	-	nC
Turn-On Delay Time at V_{DS} = 30 V, V_{GS} = 10 V, I_D = 0.5 A , R_L = 60 Ω , R_G = 25 Ω	$t_{d(on)}$	-	5.5	-	ns
Turn-On Rise Time at V_{DS} = 30 V, V_{GS} = 10 V, I_D = 0.5 A , R_L = 60 Ω , R_G = 25 Ω	t_r	-	3	-	ns
Turn-Off Delay Time at V_{DS} = 30 V, V_{GS} = 10 V, I_D = 0.5 A , R_L = 60 Ω , R_G = 25 Ω	$t_{d(off)}$	-	6	-	ns
Turn-Off Fall Time at V_{DS} = 30 V, V_{GS} = 10 V, I_D = 0.5 A , R_L = 60 Ω , R_G = 25 Ω	t_f	-	30	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S = 0.5 A	V_{SD}	-	-	1.3	V
Body Diode Reverse Recovery Time at I_S = 0.5 A , di/dt = 100 A / µs	t_{rr}	-	42	-	ns
Body Diode Reverse Recovery Charge at I_S = 0.5 A , di/dt = 100 A / µs	Q_{rr}	-	41	-	nC

Electrical Characteristics Curves

Fig.1 Transfer Characteristic

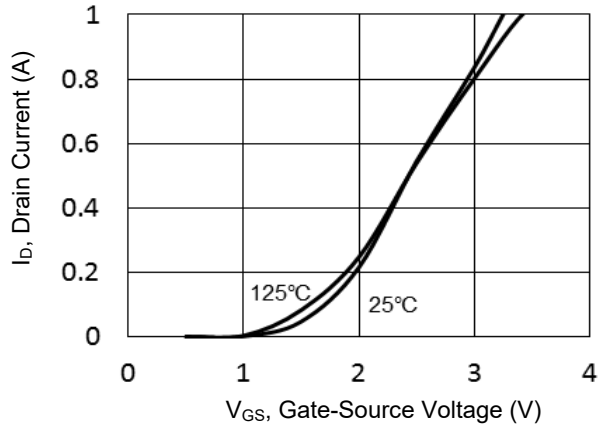


Fig.2 Output Characteristic

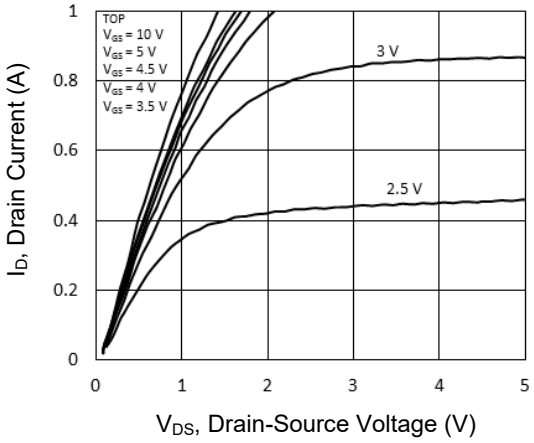


Fig.3 Normalized On-Resistance vs Temperature

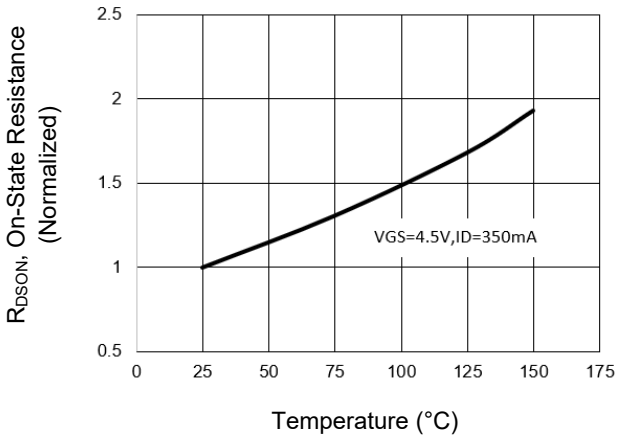


Fig.4 On-Resistance vs Gate-Source Voltage

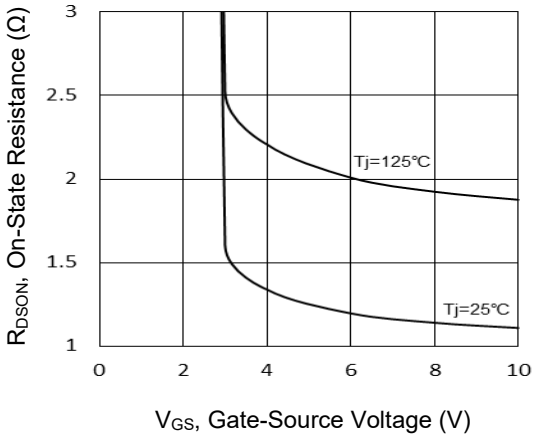


Fig.5 Junction Capacitance

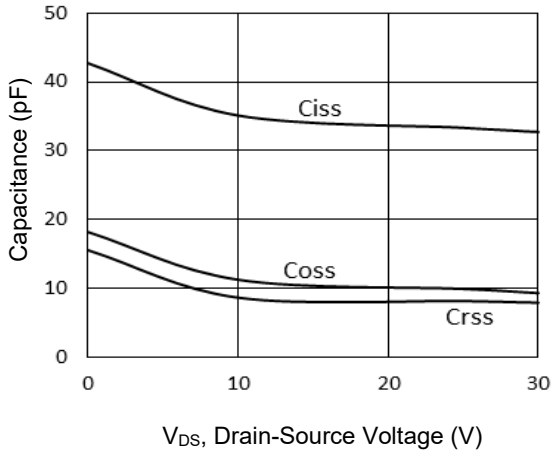
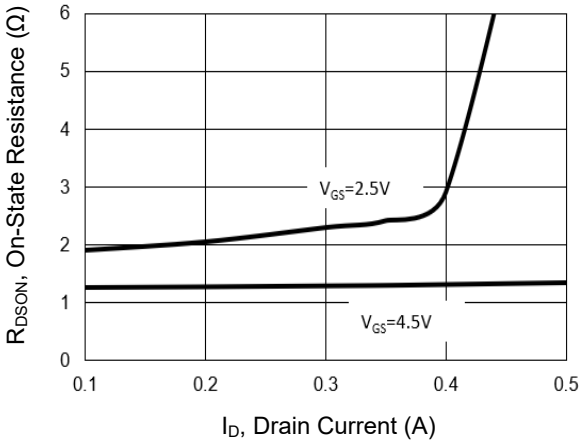


Fig.6 On-Resistance vs Drain Current



Electrical Characteristics Curves

Fig.7 B_{VDSS} vs Temperature

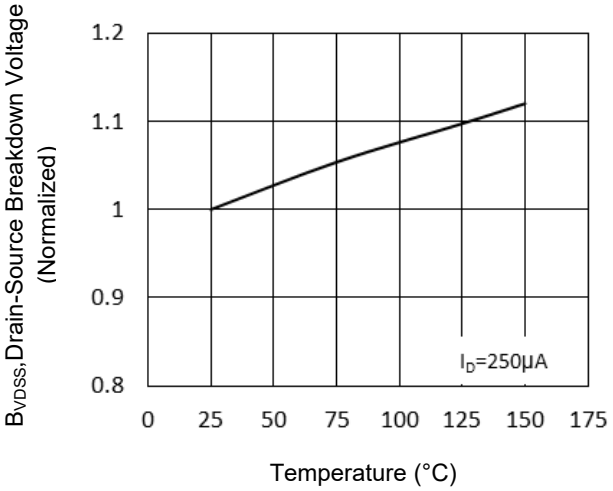


Fig.8 $V_{GS(th)}$ Variation vs Temperature

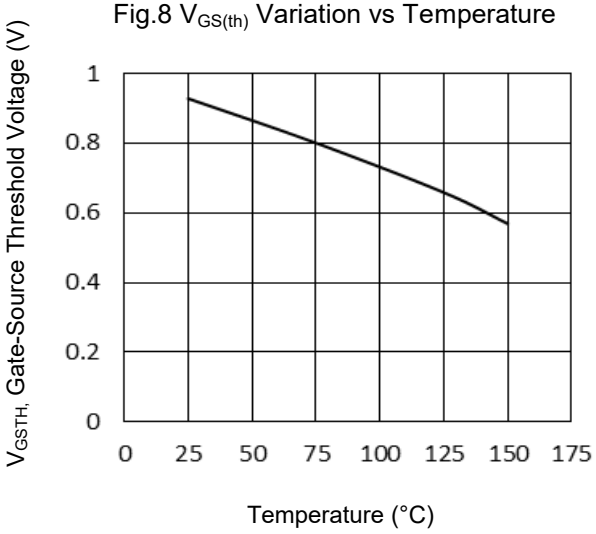


Fig.9 Forward Voltage

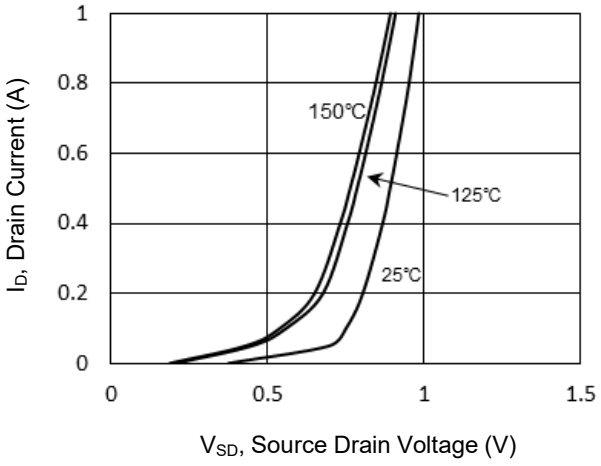
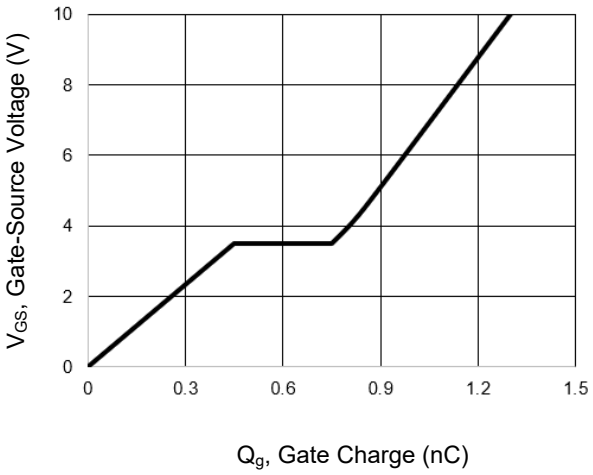


Fig.10 Gate Charge



Test Circuits

Fig.1-1 Switching times test circuit

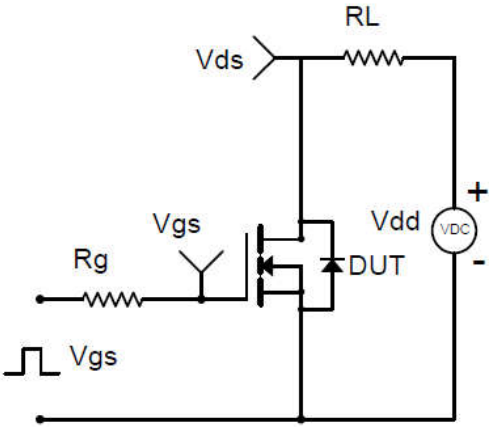


Fig.1-2 Switching Waveform

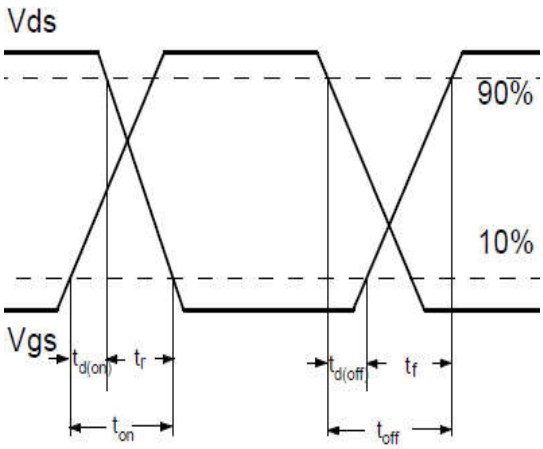


Fig.2-1 Gate charge test circuit

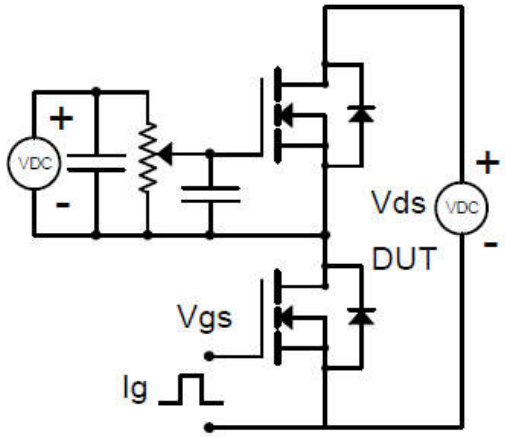
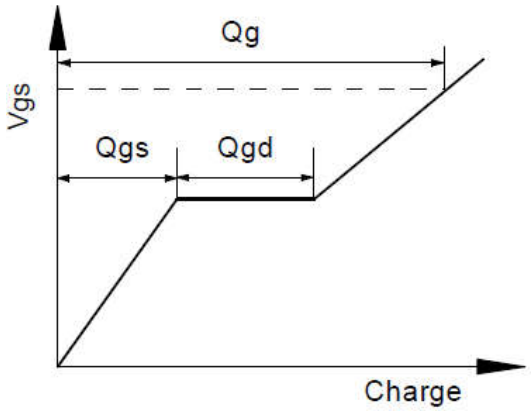
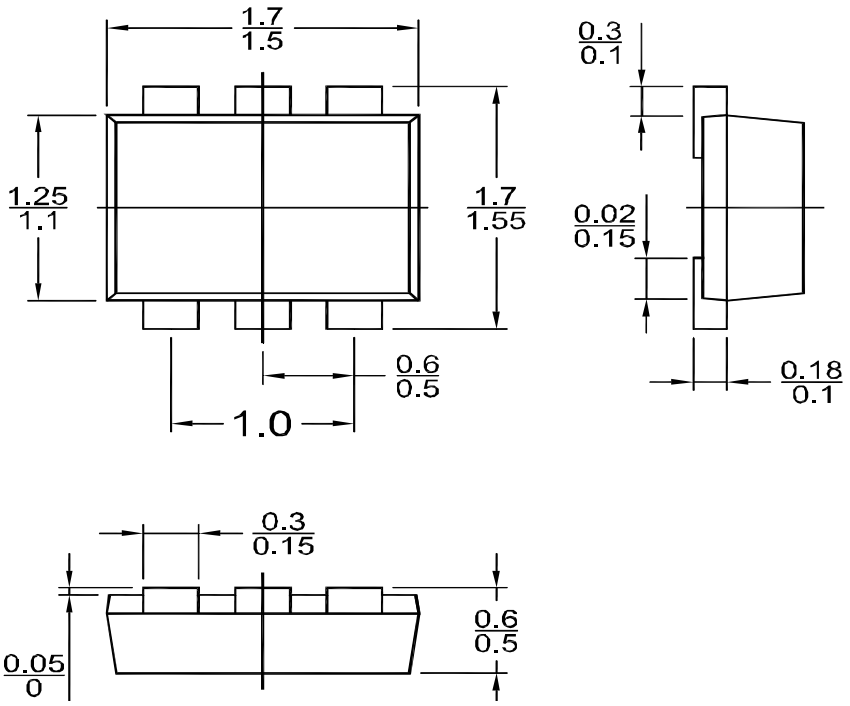


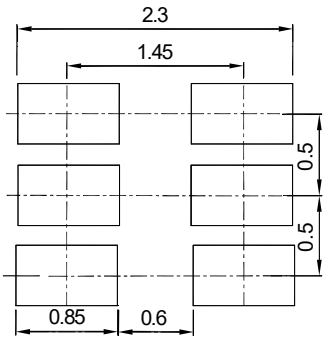
Fig.2-2 Gate charge waveform



Package Outline Dimensions (Units: mm) SOT-563



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-563	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

" MJ " = Part No.
" • " = HAF (Halogen and Antimony Free)
" YM " = Date Code Marking
" Y " = Year
" M " = Month
Font type: Arial