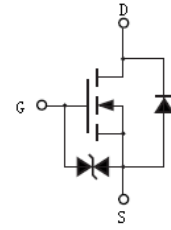


Features

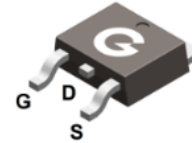
- Low power loss by high speed switching and low on-resistance
- Excellent thermal behavior
- Very low FOM for fast switching efficiency
- Product validation acc. JEDEC Standard
- Integrated ESD protection diode: HBM: JESD22-A114-B: 2

HF



Applications

- LED lighting
- Adapters
- Chargers
- Industrial power
- PFC stage



TO-252

Mechanical Data

- Case: TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJM80R380D	TO-252	80 pcs / Tube & 2500 pcs / Tape & Reel	SJM80R380D

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	800	V
Gate-to-Source Voltage (Static)	V _{GSS}	±20	V
Continuous Drain Current (T _C = 25°C)	I _D	13	A
Continuous Drain Current (T _C = 100°C)		8.2	A
Pulsed Drain Current (t _p = 10μs, T _C = 25°C)	I _{DM}	52	A
Single Pulse Avalanche Energy *3	E _{AS}	300	mJ
Power Dissipation (T _C = 25°C)	P _D	156	W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	R _{θJC}	-	0.6	0.8	°C/W
Thermal Resistance Junction-to-Air *1	R _{θJA}	-	-	62	°C/W

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 1	μA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance ^{*2}	$V_{GS} = 10V, I_D = 4A$	-	0.31	0.38	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3.2	4	V
R_G	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	3.9	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	1266	-	μF
C_{OSS}	Output Capacitance	$V_{DS} = 40V$	-	114	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 250kHz$	-	4.6	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 400V$	-	21	-	ns
t_r	Turn-on Rise Time	$V_{GS} = 15V$	-	29	-	
$t_{d(OFF)}$	Turn-Off Delay Time	$I_D = 4A$	-	58	-	
t_f	Turn-Off Fall Time	$R_G = 3.3\Omega$	-	83	-	
Q_G	Total Gate-Charge	$V_{DD} = 640V$	-	33	-	nC
Q_{GS}	Gate to Source Charge	$V_{GS} = 10V$	-	4.6	-	
Q_{GD}	Gate to Drain (Miller) Charge	$I_D = 6.5A$	-	12.6	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage ^{*2}	$I_{SD} = 6.5A, V_{GS} = 0V$	-	0.84	1.2	V
t_{rr}	Reverse Recovery Time	$I_F = 4A, V_R = 400V$	-	295	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt = 100A/\mu s$	-	2.9	-	μC

Notes:

- The data tested by surface mounted on a minimum recommended FR-4 board
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 100V, V_{GS} = 10V, L = 50mH$

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

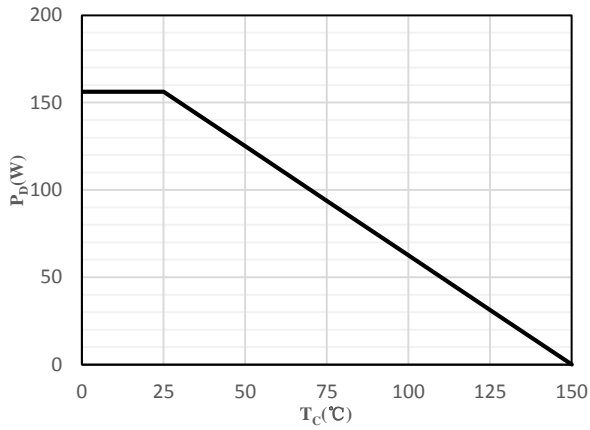


Fig 1 Power Dissipation

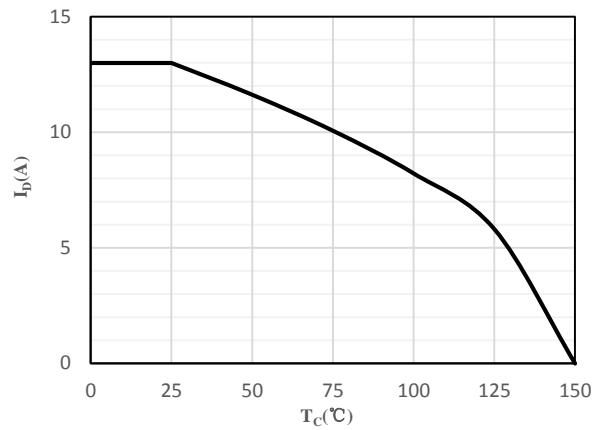


Fig 2 Drain Current

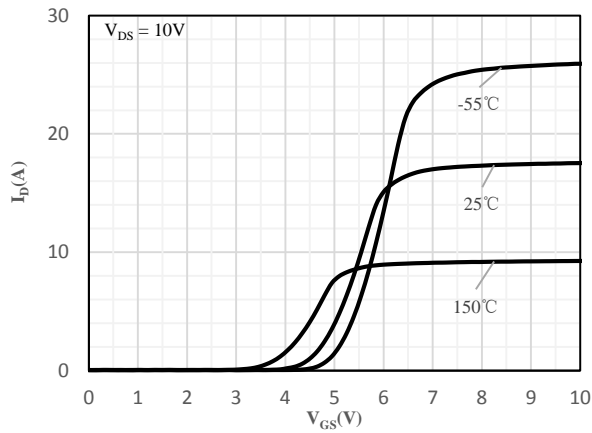


Fig 3 Typical Output Characteristics

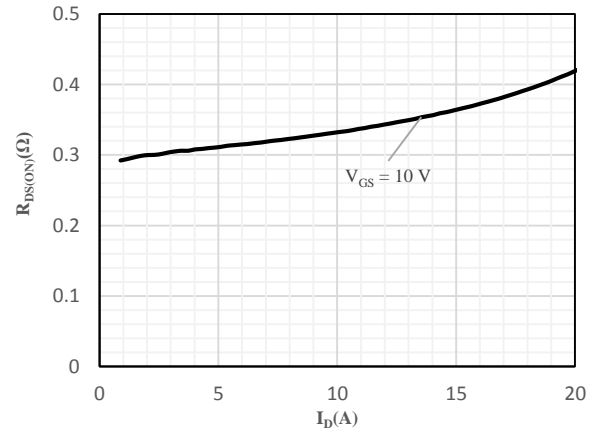


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

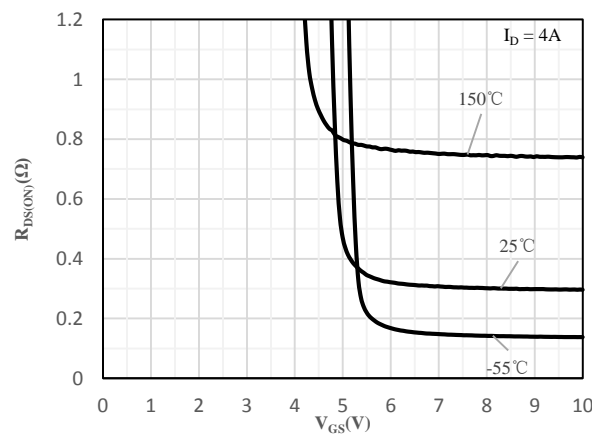


Fig 5 On-Resistance vs. Gate-Source Voltage

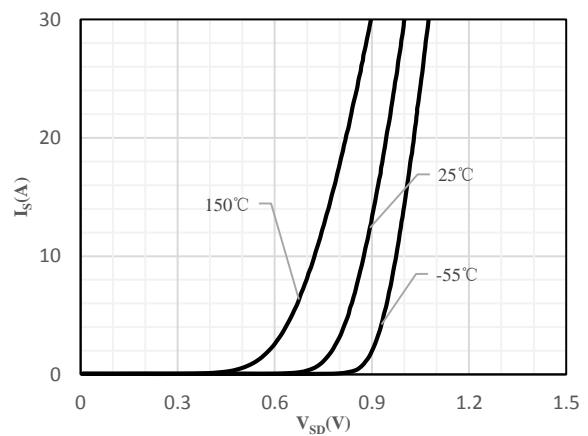


Fig 6 Body-Diode Characteristics

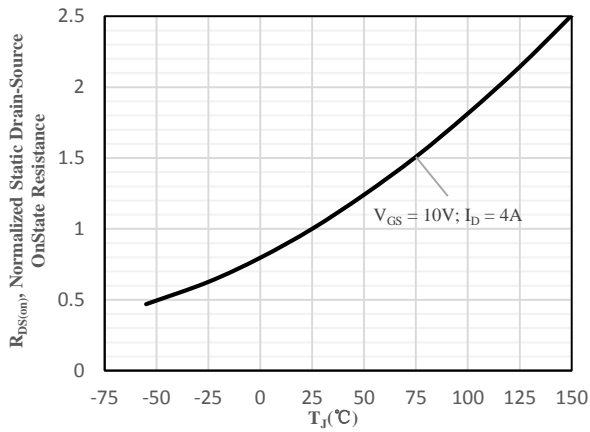


Fig 7 Normalized On-Resistance vs. Junction Temperature

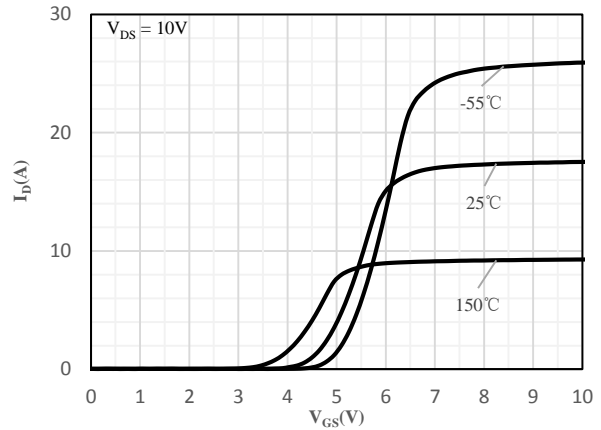


Fig 8 Transfer Characteristics

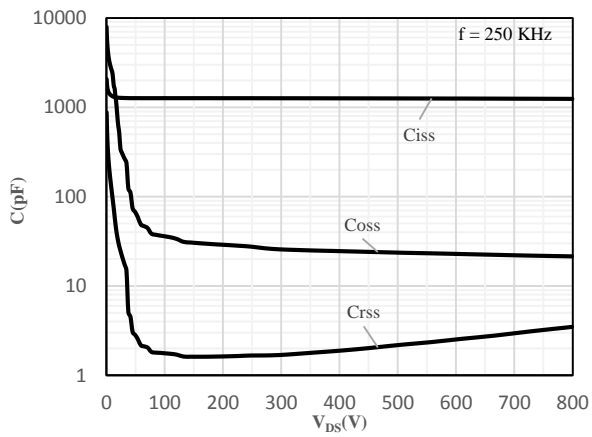


Fig 9 Capacitance Characteristics

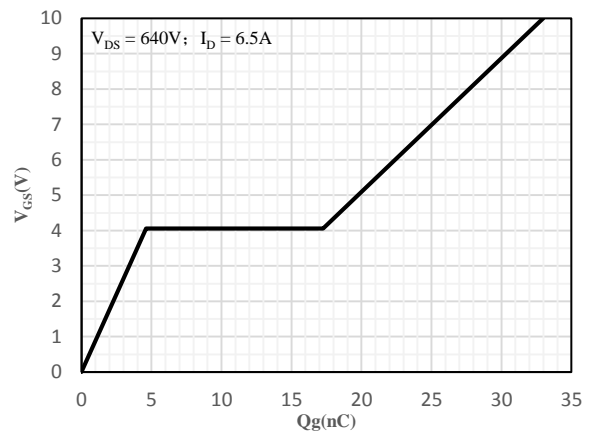


Fig 10 Gate-Charge Characteristics

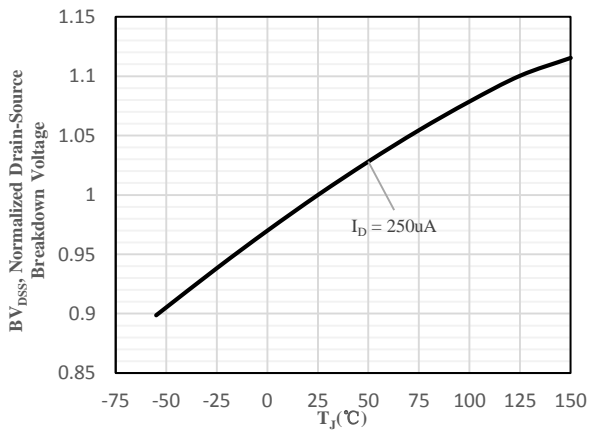


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

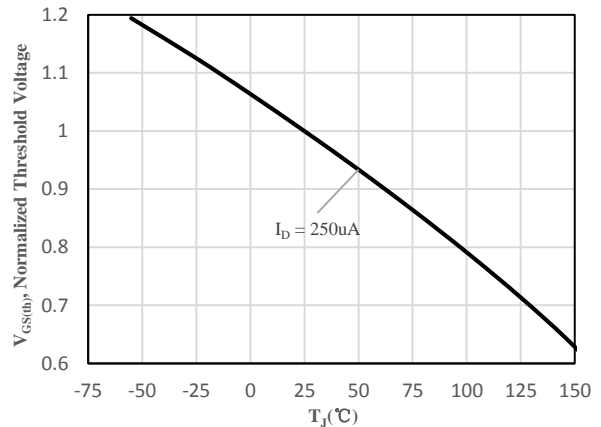


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

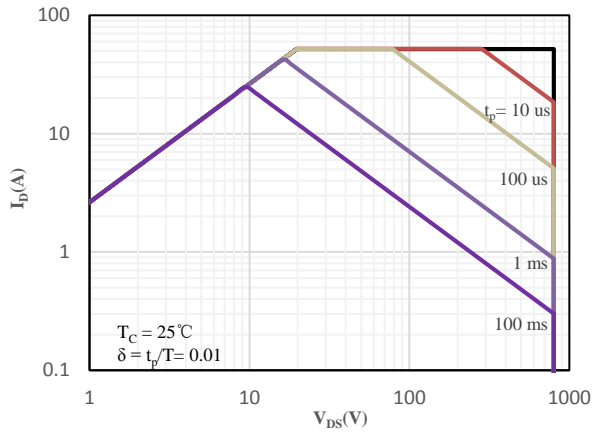


Fig 13 Safe Operating Area

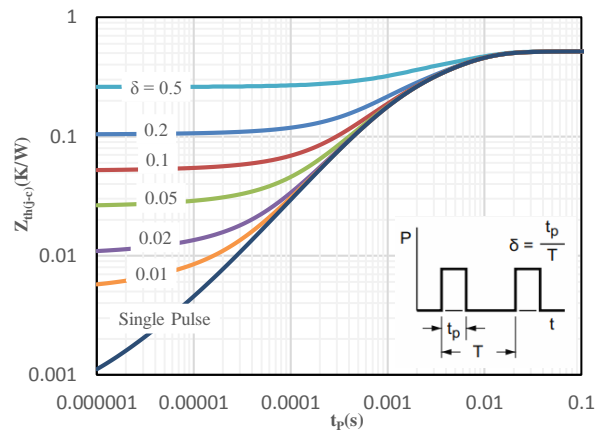
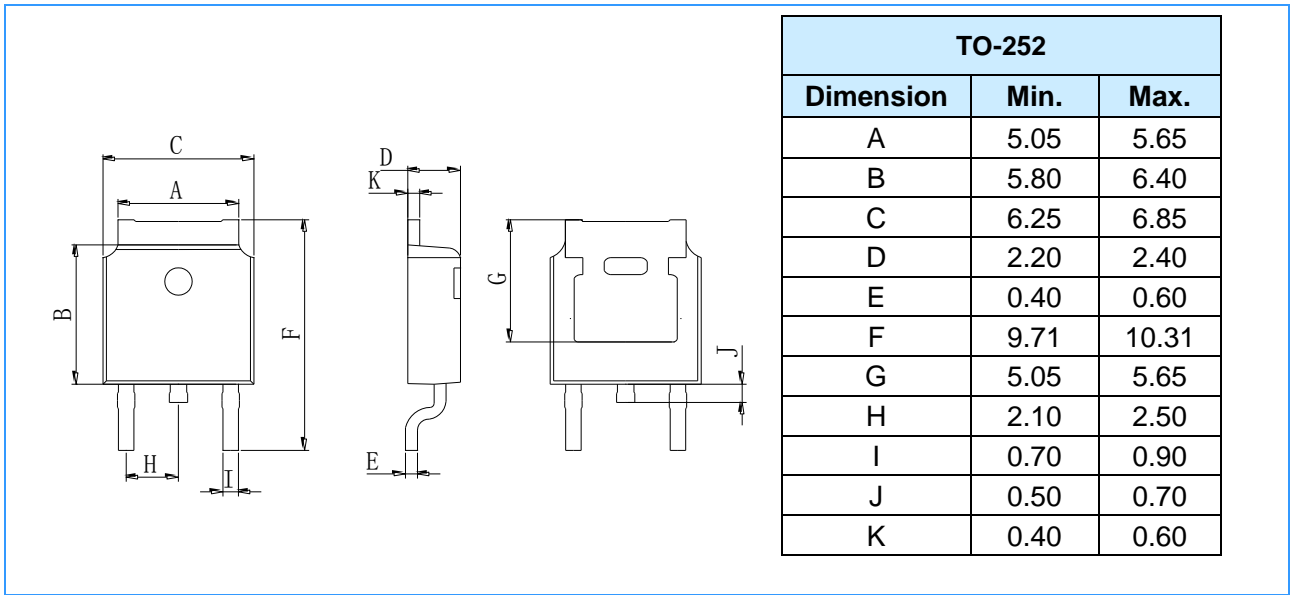
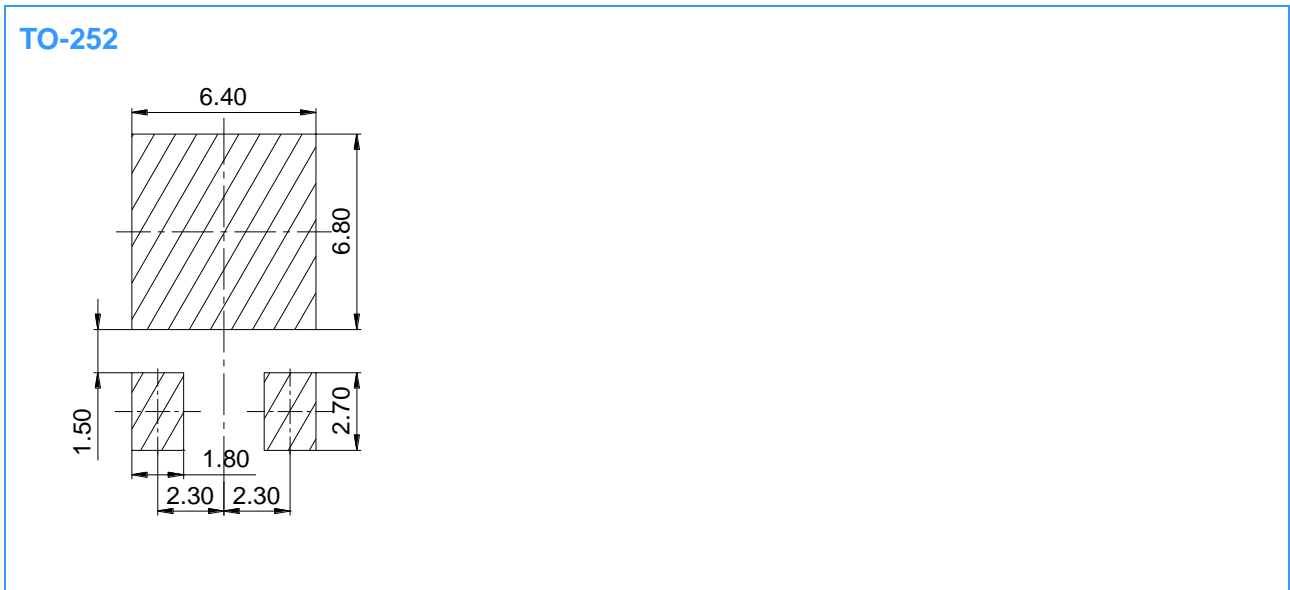


Fig 14 Maximum transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



IMPORTANT NOTICE

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.