

Features

- Very low FOM $R_{DS(on)} \times Q_G$
- Fast switching capability

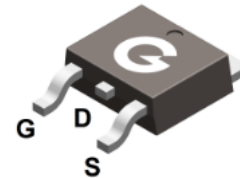
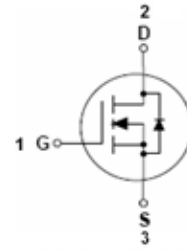
HF

APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)

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



TO-252

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJ65R380D	TO-252	80 pcs / Tube or 2500 pcs / Tape & Reel	SJ65R380D

Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	11	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)	I_D	7.9	A
Pulsed Drain Current ($T_C = 25^\circ\text{C}$) ^{*1}	I_{DM}	44	A
Single Pulse Avalanche Energy ^{*2}	E_{AS}	210	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	118	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	87	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.06	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	650	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 650V, V _{GS} = 0V	-	-	1	μA
		V _{DS} = 520V, V _{GS} = 0V, T _C = 125°C	-	10	-	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = 10V, I _D = 5.5A	-	-	0.38	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	-	4	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 100V f = 1MHz	-	830	-	pF
C _{OSS}	Output Capacitance		-	37	-	
C _{RSS}	Reverse Transfer Capacitance		-	0.65	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DS} = 400V V _{GS} = 10V I _D = 5.5A R _G = 25Ω	-	16	-	ns
t _r	Turn-on Rise Time		-	35	-	
t _{d(OFF)}	Turn-Off Delay Time		-	75	-	
t _f	Turn-Off Fall Time		-	38	-	
Q _G	Total Gate-Charge	V _{DS} = 520V V _{GS} = 10V I _D = 5.5A	-	19	-	nC
Q _{GS}	Gate to Source Charge		-	3.2	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	8.5	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _S = 5.5A, V _{GS} = 0V	-	-	1.2	V
I _S	Diode Continuous Forward Current		-	-	11	A
I _{SM}	Pulsed Source-Drain Current		-	-	44	A
t _{rr}	Reverse Recovery Time	I _S = 5.5A, V _R = 400 V	-	312	-	ns
Q _{rr}	Reverse Recovery Charge	di _F /dt = 100 A/μs	-	2.9	-	μC

Notes:

- Limited by maximum junction temperature, maximum duty cycle is 0.75
- $V_{DD} = 50V, R_G = 25\Omega, L = 3mH$, Starting $T_J = 25^\circ\text{C}$

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

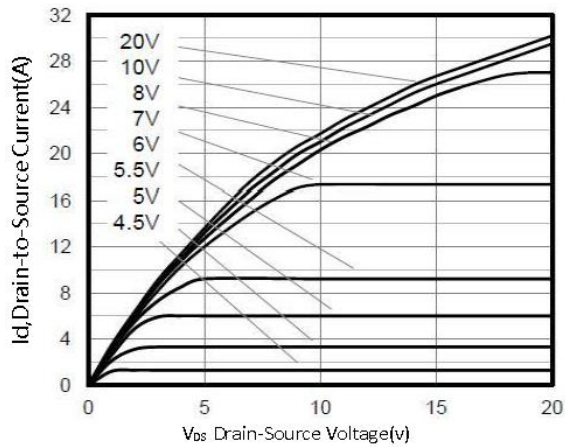


Fig 1 Output Characteristics

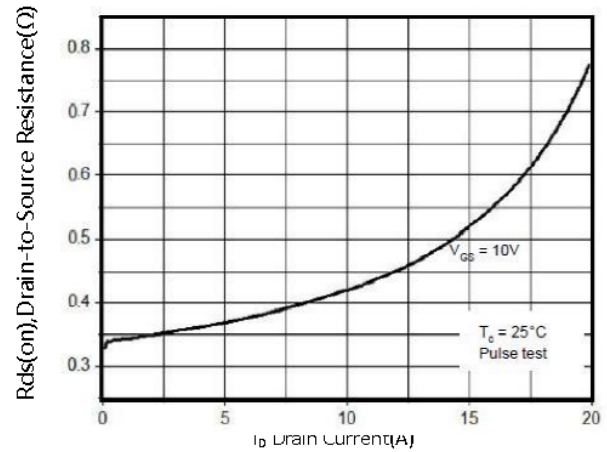


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

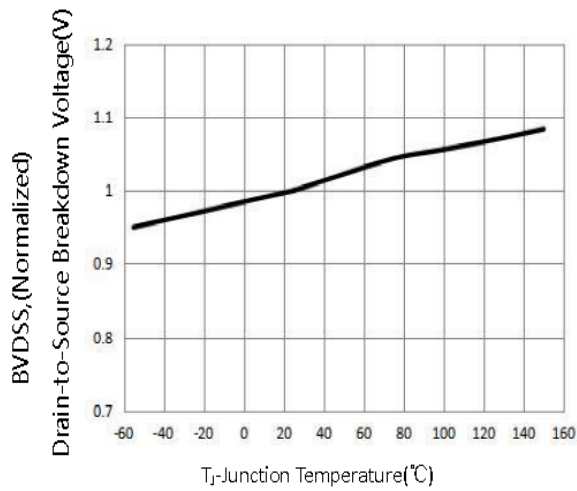


Fig 3 Breakdown Voltage vs. Junction Temperature

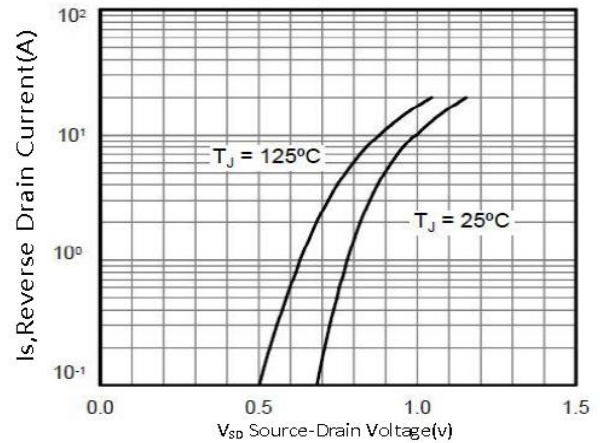


Fig 4 Body-Diode Characteristics

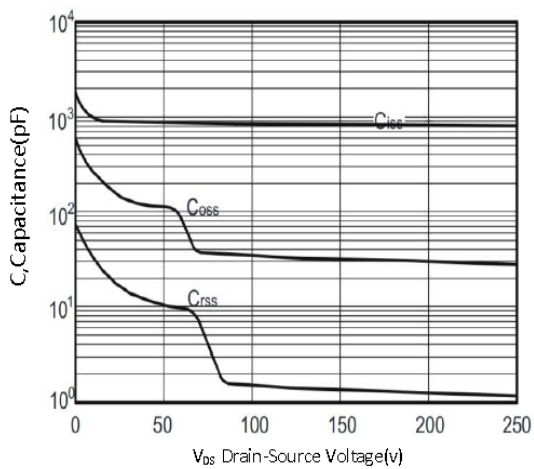


Fig 5 Capacitance Characteristics

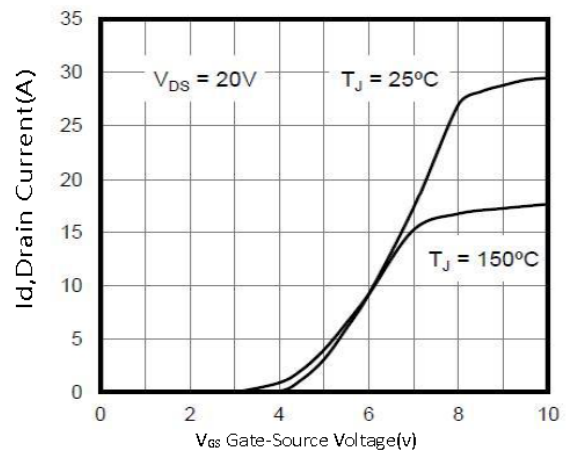


Fig 6 Transfer Characteristics

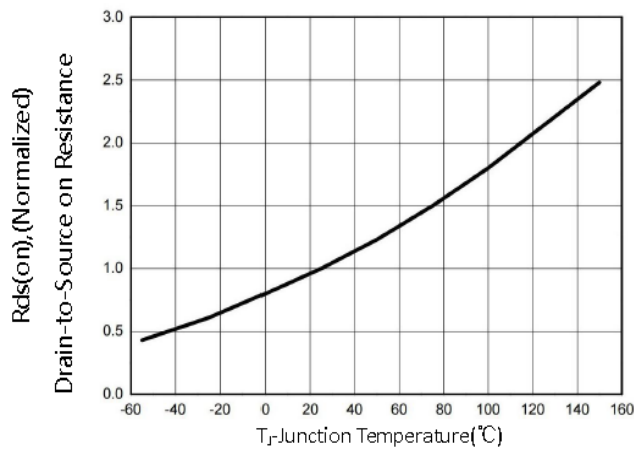


Fig 7 On-Resistance vs. Junction Temperature

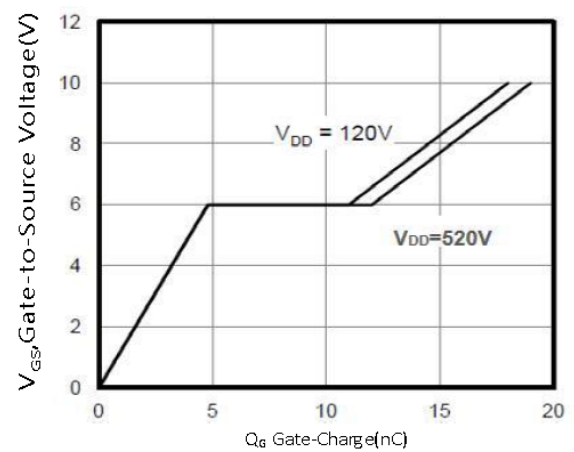


Fig 8 Gate-Charge Characteristics

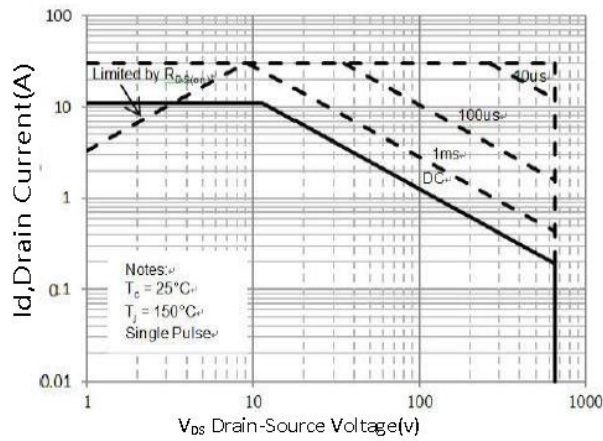


Figure 9 Maximum Safe Operating Area

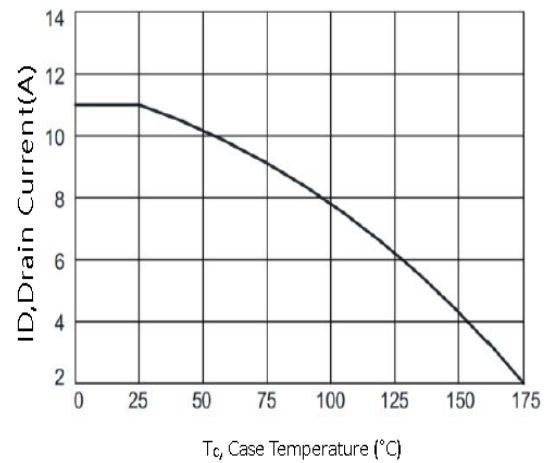
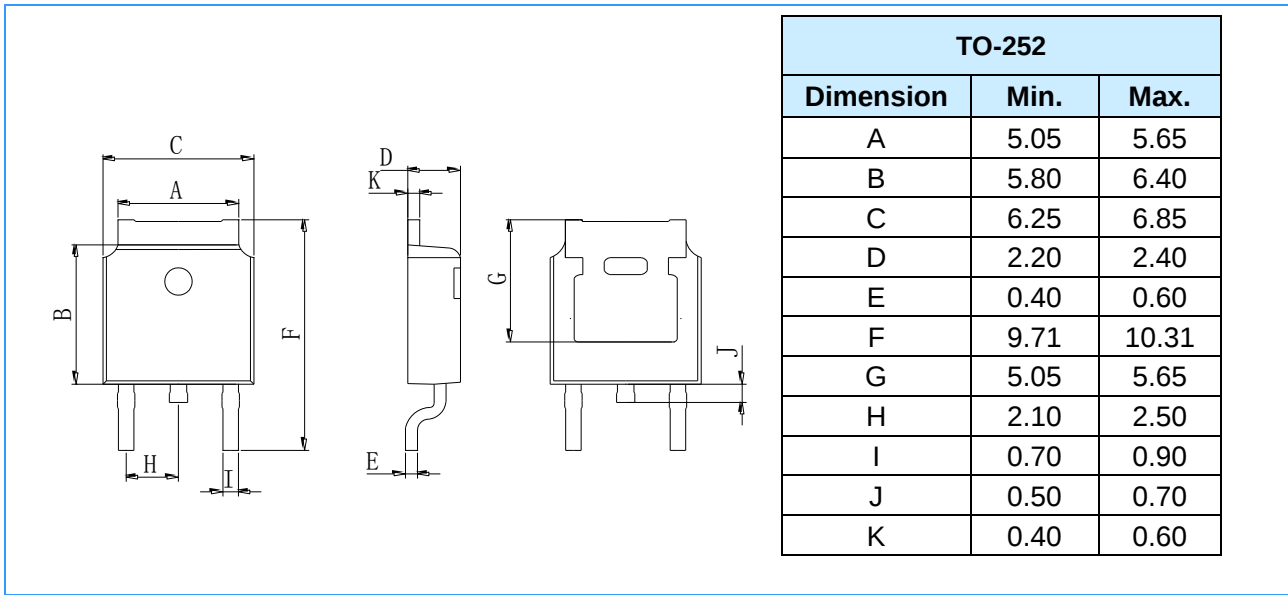
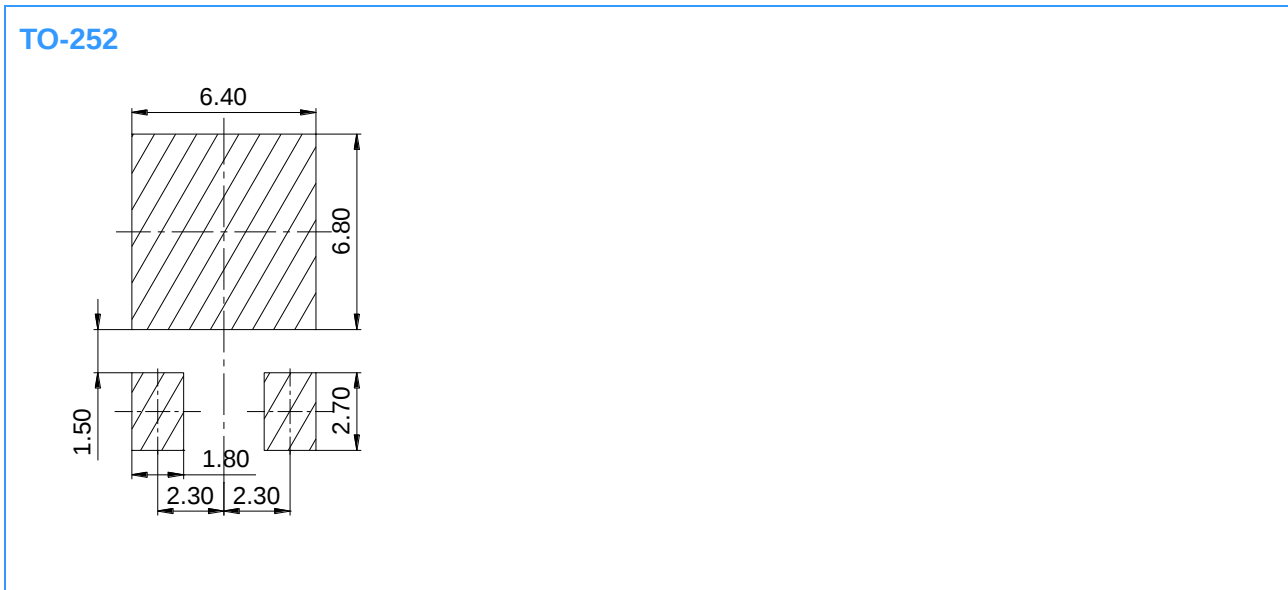


Figure 10 Maximum Continuous Drain
Current versus Case Temperature

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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