

Features

- Very low FOM $R_{DS(on)} \times Q_G$
- Very high commutation ruggedness

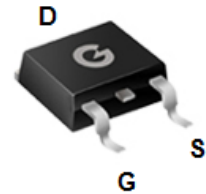
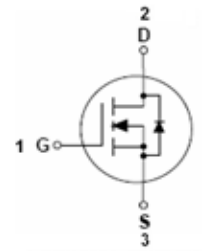
HF

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
SJ65R340D	TO-252	80 pcs / Tube or 2500 pcs / Tape & Reel	SJ65R340D

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$) ^{*1}	I_D	14	A
Continuous Drain Current ($T_C = 125^\circ\text{C}$) ^{*1}	I_D	7.5	A
Pulsed Drain Current ($T_C = 25^\circ\text{C}$)	I_{DM}	29.3	A
Single Pulse Avalanche Energy ^{*2}	E_{AS}	250	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	104.2	W
Thermal Resistance Junction-to-Air ($T_C = 25^\circ\text{C}$)	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case ($T_C = 25^\circ\text{C}$)	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +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	$V_{GS} = 0V, I_D = 250\mu A$	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	-	-	1	μA
		$V_{DS} = 650V, V_{GS} = 0V, T_J = 150^\circ\text{C}$	-	-	10	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 6A, T_J = 25^\circ\text{C}$	-	-	0.34	Ω
		$V_{GS} = 10V, I_D = 6A, T_J = 150^\circ\text{C}$	-	-	0.85	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	781	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 100V$	-	30.3	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 250\text{kHz}$	-	1.47	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DS} = 400V$ $V_{GS} = 13V$ $I_D = 7A$	-	6.2	-	ns
t_r	Turn-on Rise Time		-	21	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	28.8	-	
t_f	Turn-Off Fall Time		-	22.4	-	
Q_G	Total Gate-Charge	$V_{DS} = 400V$	-	20.4	-	nC
Q_{GS}	Gate to Source Charge	$V_{GS} = 10V$	-	2.77	-	
Q_{GD}	Gate to Drain (Miller) Charge	$I_D = 7A$	-	5.8	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	$I_S = 6A, V_{GS} = 0V$	-	0.846	-	V
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$	-	-	14	A
I_{SM}	Pulsed Source-Drain Current		-	-	29.3	A
t_{rr}	Reverse Recovery Time	$I_S = 7A, V_R = 400V$	-	218	-	ns
Q_{rr}	Reverse Recovery Charge	$di_f/dt = 50 A/\mu s$	-	1.1	-	μC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_D = 3.2A, V_{DD} = 50V, R_G = 25\Omega, L = 50\text{mH}$, Starting $T_J = 25^\circ\text{C}$

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

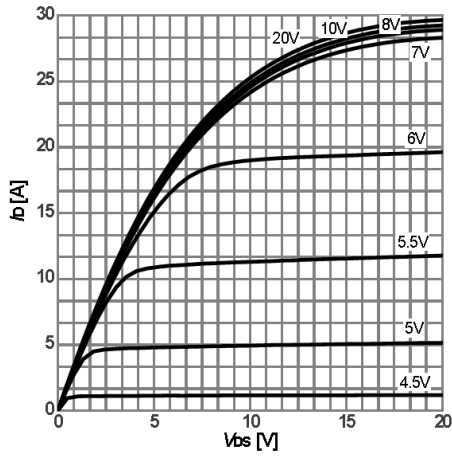


Fig 1 Output Characteristics

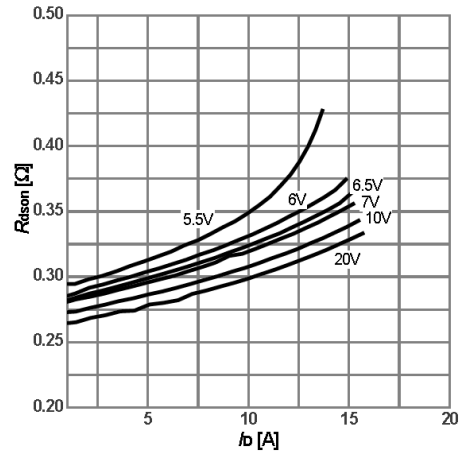


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

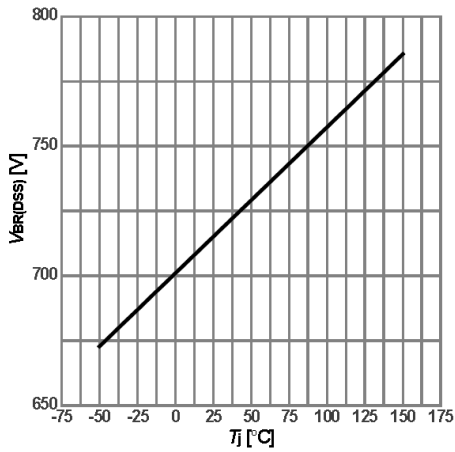


Fig 3 Breakdown Voltage vs. Junction Temperature

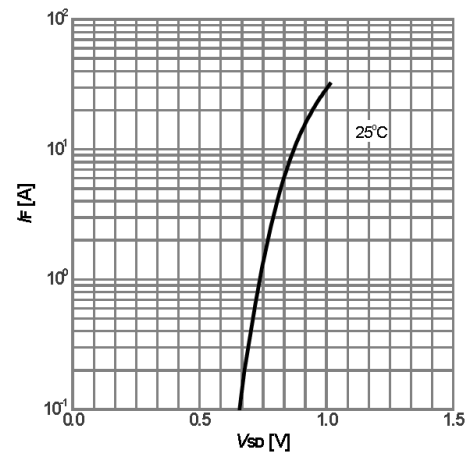


Fig 4 Body-Diode Characteristics

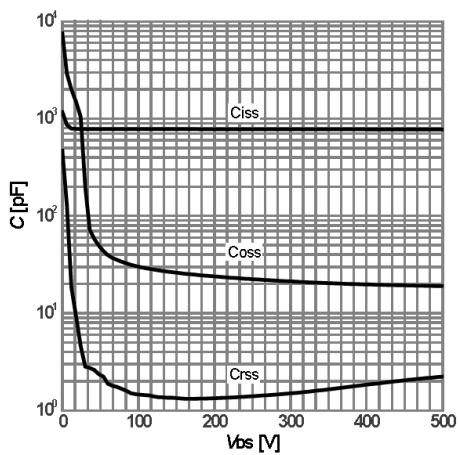


Fig 5 Capacitance Characteristics

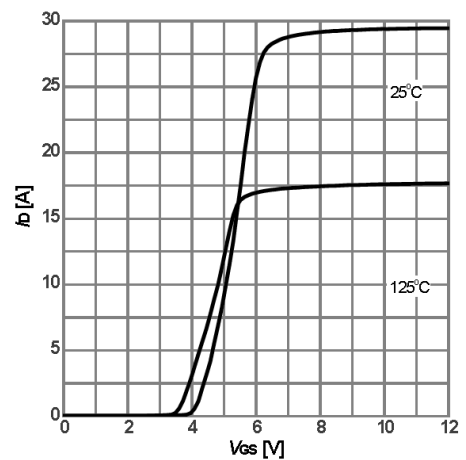


Fig 6 Transfer Characteristics

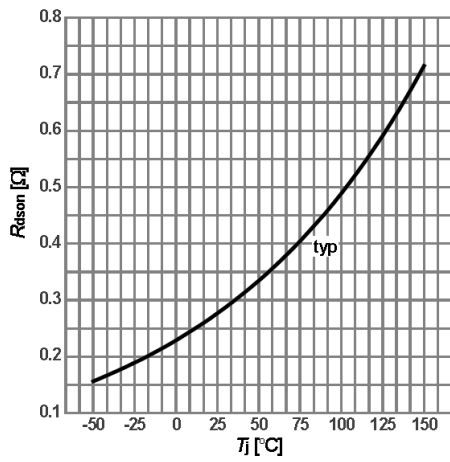


Fig 7 On-Resistance vs. Junction Temperature

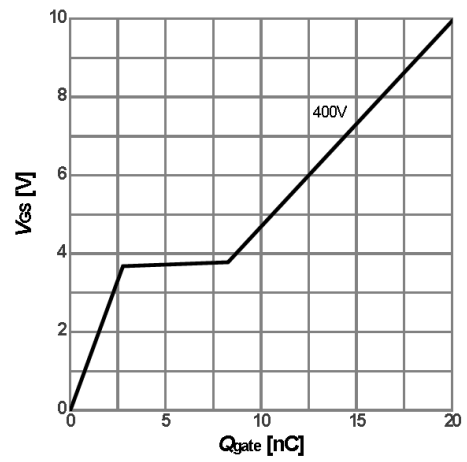


Fig 8 Gate-Charge Characteristics

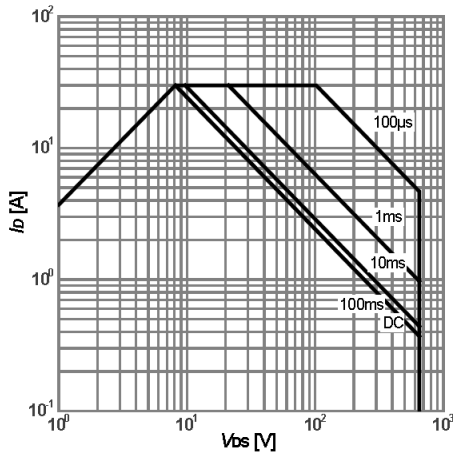


Figure 9 Maximum Safe Operating Area

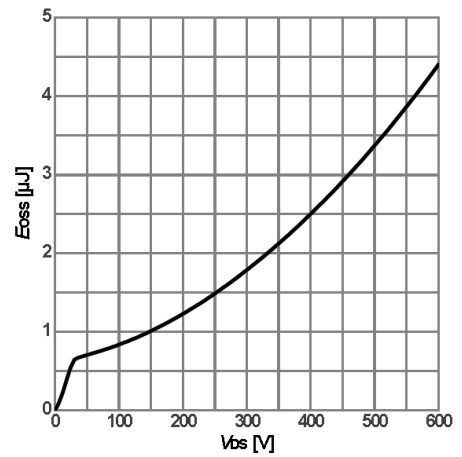


Figure 10 Typical Coss stored energy

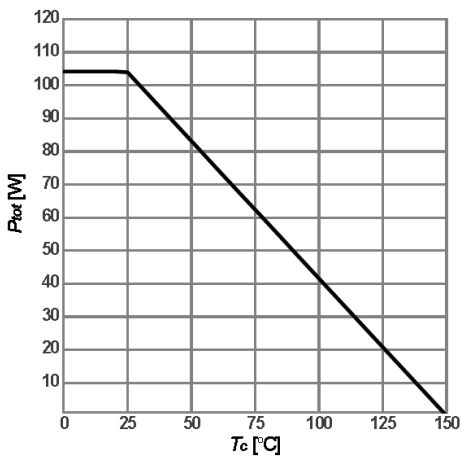


Figure 11 Power Dissipation

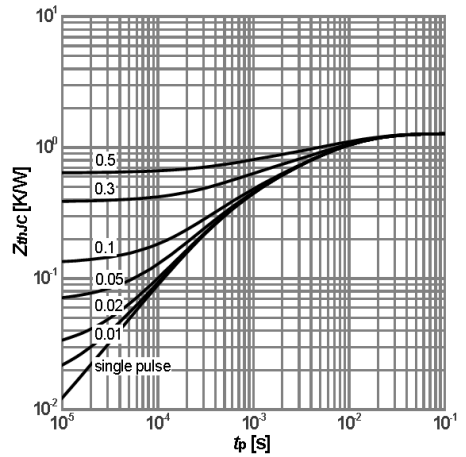
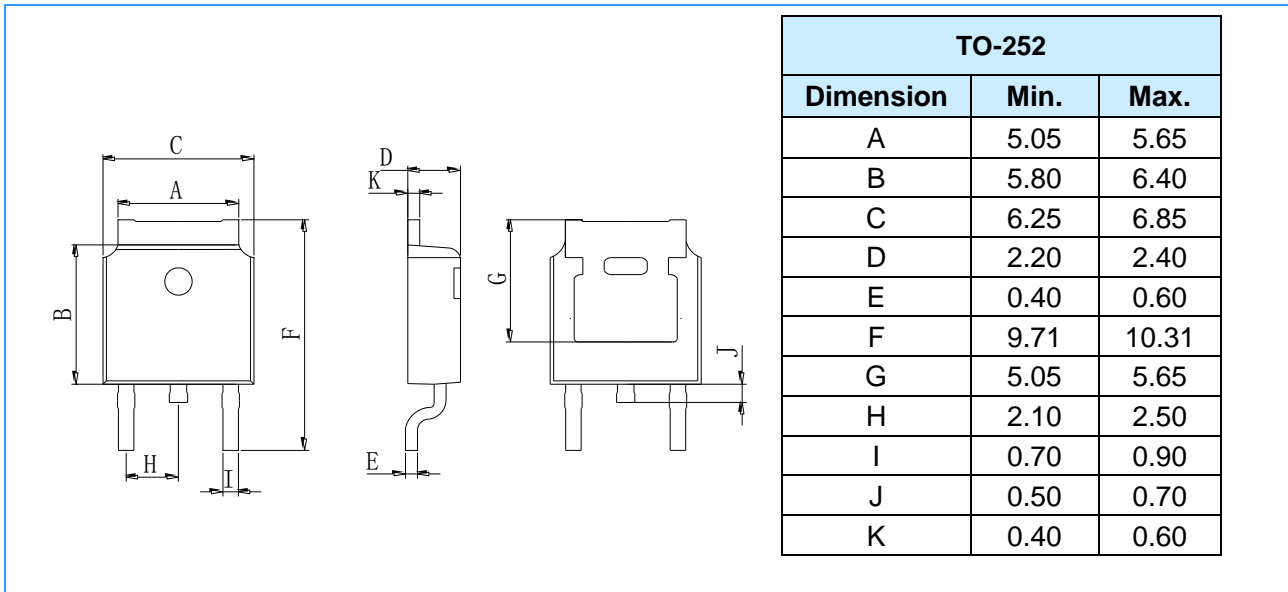
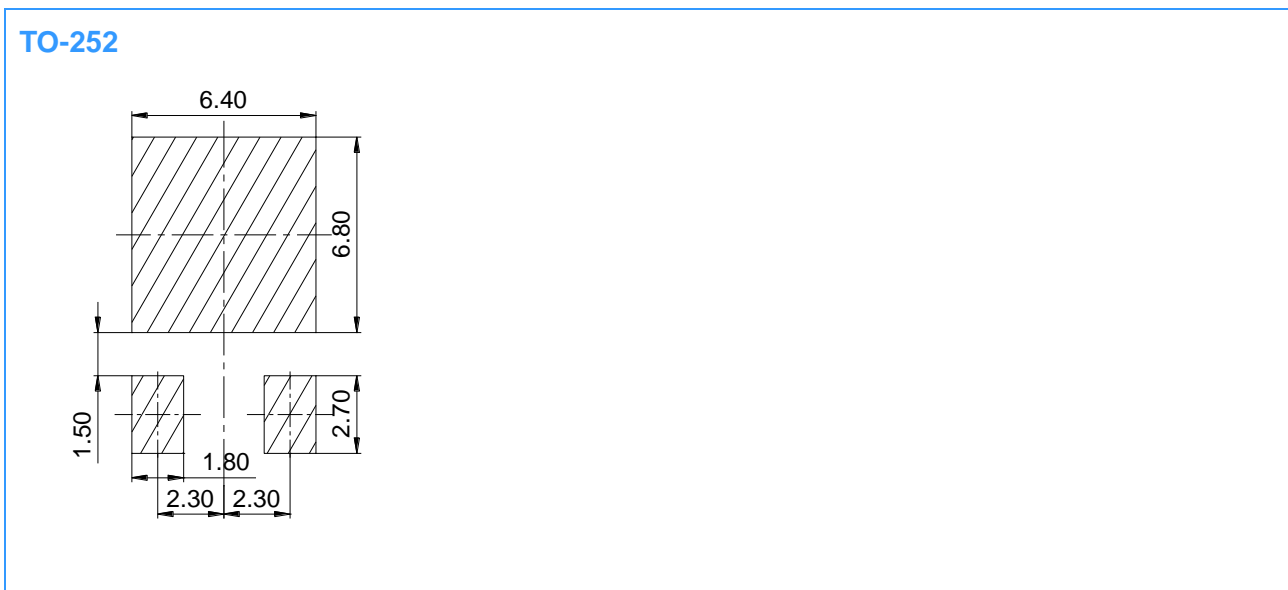


Figure 12 Max. transient thermal impedance

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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