

Super-Junction Power Mosfet

1. Product Information

Features

Surface-mounted package
Super Junction technology
Fast switching efficiency

Pin Description

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

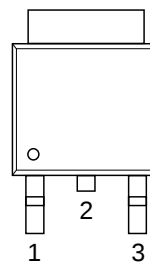
Applications

Power supply
Charger
Solar/UPS-Micro inverter system

Quick reference

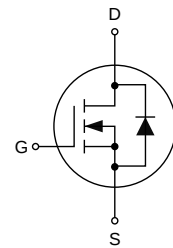
$V_{DS} \geq 700\text{ V}$
 $I_D \leq 6\text{ A}$
 $R_{DS(ON)} \leq 900\text{ m}\Omega @ V_{GS}=10\text{ V}$ (Type 780 m Ω)

Simplified Outline



Top View
TO-252

Symbol



Package Marking and Ordering Information

Part number	Marking	Package	Packaging	Quantity	Reel size	Tape width
KJC70R900K	KJC70R900K	TO-252-3L	☒ Tape & Reel	2500 PCS	13"	16 mm
			☐ Tube	N/A	N/A	N/A

2. Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	700	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current (T _C =25°C)	6	A
	Continuous Drain Current (T _C =100°C)	3.8	A
I_{DM}	Pulsed Drain Current	24	A
E_{AS}	Single Pulsed Avalanche Energy (L=30 mH)	60	mJ
dv/dt	Peak Diode Recovery dv/dt	50	V/ns
I_S	Continuous diode forward current	6	A
P_D	Power Dissipation	83	W
T _J , T _{stg}	Operating Junction and Storage Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	135	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-Case	1.5	°C/W

3. Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Type	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _D =250 μA	700	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =700 V, V _{GS} =0 V	-	-	1	μA
		V _{DS} =700 V, T _C =150°C	-	10	-	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±30 V, V _{DS} =0 V	-	-	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μA	3	-	4	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10 V, I _D =3 A	-	780	900	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =100 V, V _{GS} =0 V, f=1 MHz	-	330	-	pF
C _{oss}	Output Capacitance		-	33	-	pF
C _{rss}	Reverse Transfer Capacitance		-	1.3	-	pF
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =350 V, I _D =3 A, R _G =27 Ω, V _{GS} =10 V	-	13	-	ns
t _r	Turn-on Rise Time		-	14	-	ns
t _{d(off)}	Turn-off Delay Time		-	50	-	ns
t _f	Turn-off Fall Time		-	62	-	ns
R _g	Gate resistance	f=1 MHz	-	9	-	Ω
Q _g	Total Gate Charge	V _{DS} =350 V, I _D =3 A, V _{GS} =10 V	-	15	-	nC
Q _{gs}	Gate-Source Charge		-	4	-	nC
Q _{gd}	Gate-Drain Charge		-	5	-	nC
Source-Drain Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0 V, I _F =3 A	-	0.85	1.1	V
Q _{rr}	Reverse Recovery Time	V _{DS} =100 V, I _F =3 A, di/dt=100 A/μs	-	1.5	-	μC
T _{rr}	Reverse Recovery Charge		-	185	-	ns

4. Electrical Characteristics

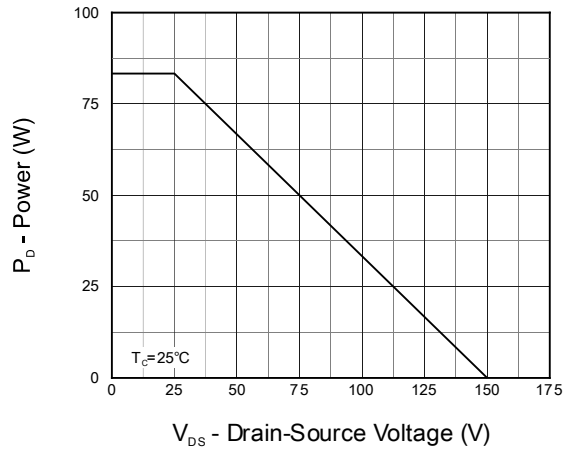


Fig 1. Power Capability

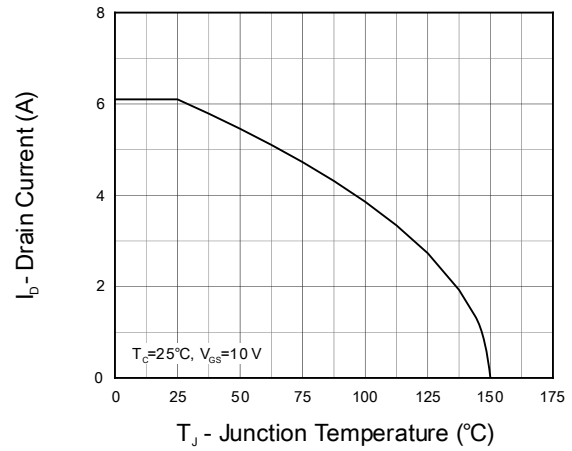


Fig 2. Current Capability

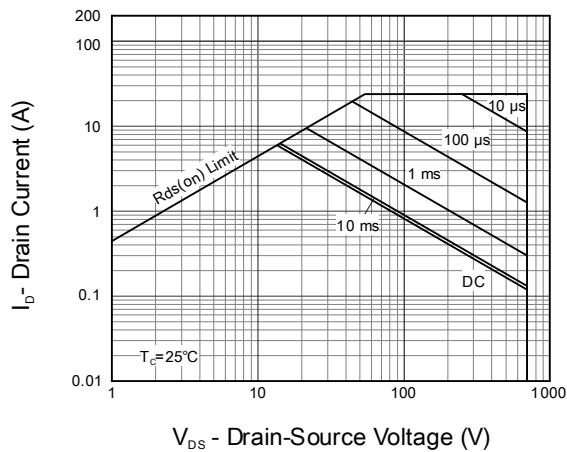


Fig 3. Safe Operation Area

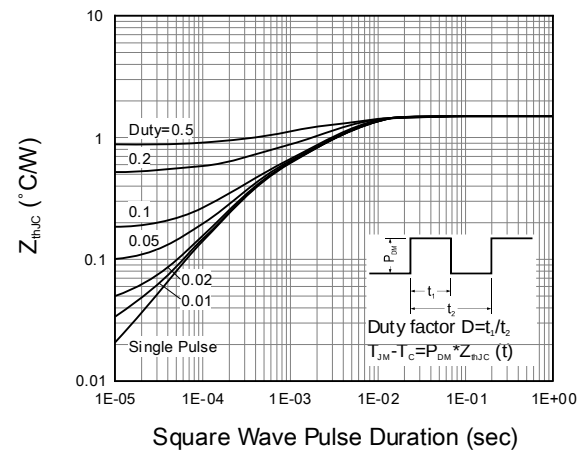


Fig 4. Transient Thermal Impedance

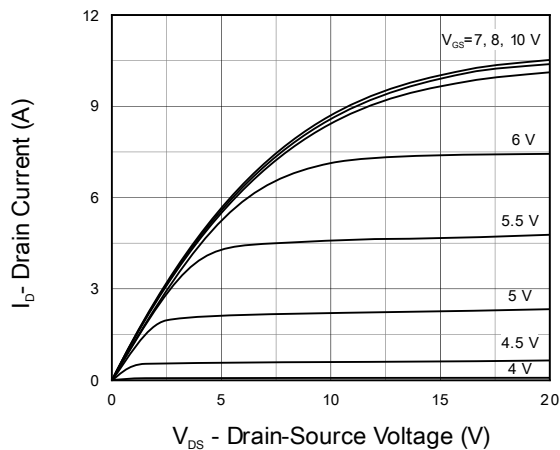


Fig 5. Output Characteristics
 $T_J=25^\circ\text{C}$

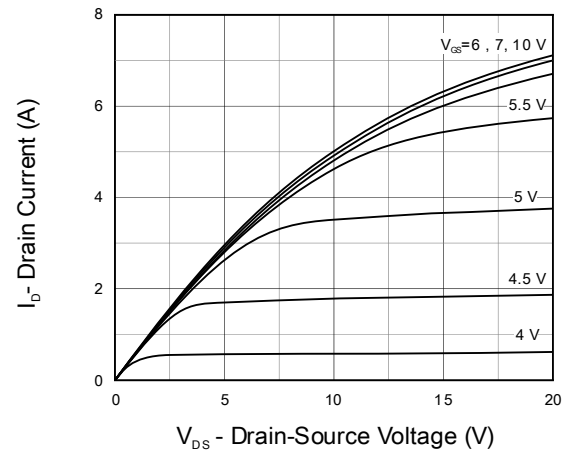


Fig 6. Output Characteristics
 $T_J=150^\circ\text{C}$

5. Electrical Characteristics (cont.)

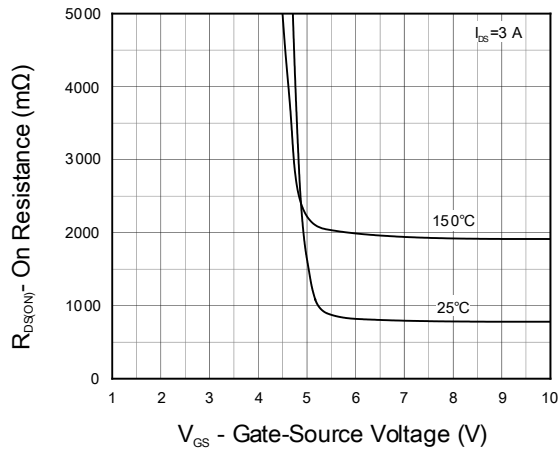


Fig 7. Transfer Characteristics

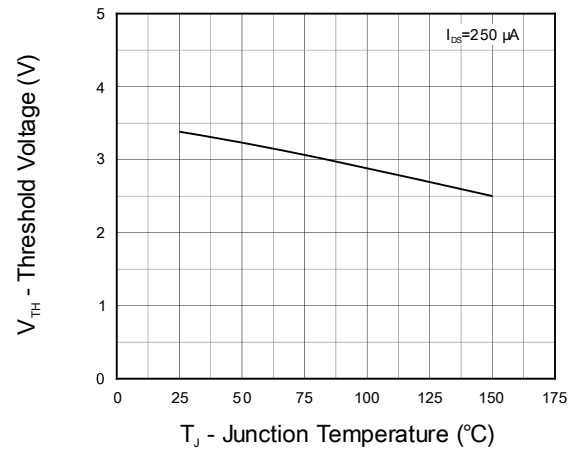


Fig 8. Normalized Threshold Voltage

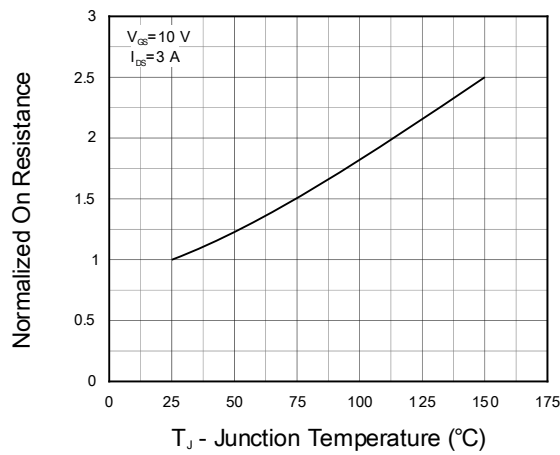


Fig 9. Normalized On Resistance

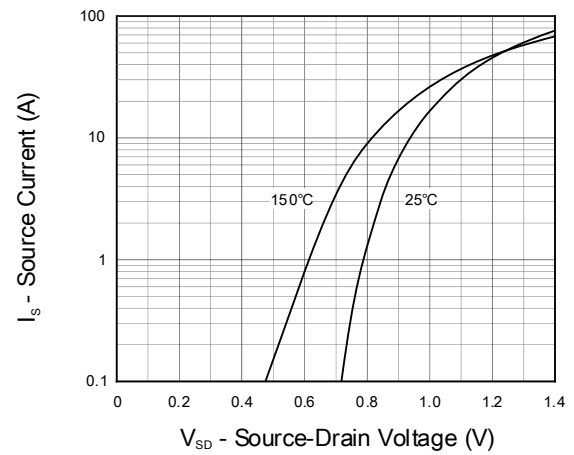


Fig 10. Diode Forward Current

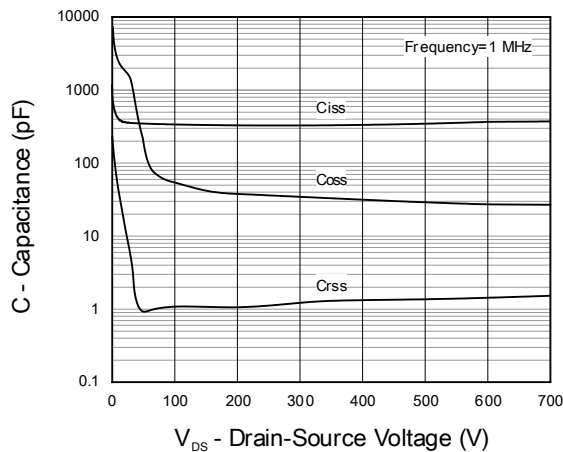


Fig 11. Capacitance

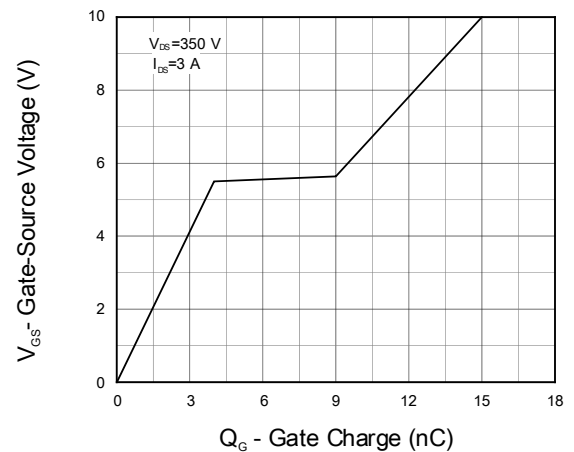
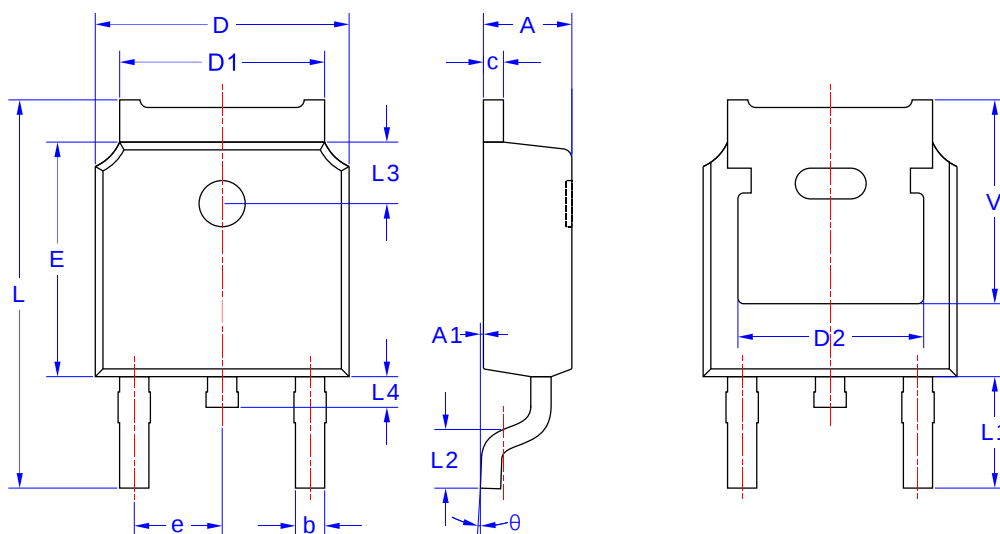


Fig 12. Gate Charge

5. Package Mechanical Data

TO-252 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	2.200	2.400
A1	0	0.127
b	0.660	0.860
c	0.460	0.580
D	6.500	6.700
D1	5.100	5.460
D2	4.830 REF.	
E	6.000	6.200
e	2.186	2.386
L	9.800	10.400
L1	2.900 REF.	
L2	1.400	1.700
L3	1.800 REF.	
L4	0.600	1.000
θ	0°	8°
V	5.600 REF.	