

Super-Junction Power Mosfet

1. Product Information

Features

- Surface-mounted package
- Super Junction technology
- Much lower FOM for fast switching efficiency

Pin Description

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

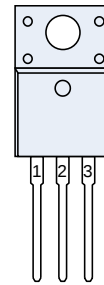
Applications

- Power supply
- Charger
- Solar/UPS-Micro inverter system

Quick reference

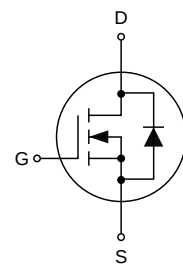
- $V_{DS} \geq 600\text{ V}$
- $I_D \leq 11\text{ A}$
- $R_{DS(ON)} \leq 360\text{ m}\Omega$ @ $V_{GS} = 10\text{ V}$ (Type 330 m Ω)

Simplified Outline



Top View
TO-220F

Symbol



Package Marking and Ordering Information

Part number	Marking	Package	Packaging	Quantity	Reel size	Tape width
KJCE60R360CF	KJCE60R360CF	TO-220F	☐ Tape & Reel	N/A	N/A	N/A
			☒ Tube	1000 PCS	N/A	N/A

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

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Current (T _C =25°C)	11	A
	Continuous Drain Current (T _C =100°C)	7	A
I_{DM}	Pulsed Drain Current	33	A
E_{AS}	Single Pulsed Avalanche Energy (L=30 mH)	72	mJ
dv/dt	Peak Diode Recovery dv/dt	100	V/ns
I_S	Continuous diode forward current	10	A
P_D	Power Dissipation	104	W
T _J , T _{stg}	Operating Junction and Storage Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	100	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-Case	1.2	°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	600	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =600 V, V _{GS} =0 V	-	-	1	μA
		V _{DS} =600 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	3.0	-	4.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10 V, I _D =5.5 A	-	330	360	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =100 V, V _{GS} =0 V, f=1 MHz	-	495	-	pF
C _{oss}	Output Capacitance		-	31	-	pF
C _{rss}	Reverse Transfer Capacitance		-	2.4	-	pF
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =400 V, I _D =5.5 A, R _G =27 Ω, V _{GS} =10 V	-	21	-	ns
t _r	Turn-on Rise Time		-	12	-	ns
t _{d(off)}	Turn-off Delay Time		-	72	-	ns
t _f	Turn-off Fall Time		-	13	-	ns
R _g	Gate resistance	f=1 MHz	-	19	-	Ω
Q _g	Total Gate Charge	V _{DS} =400 V, I _D =5.5 A, V _{GS} =10 V	-	38	-	nC
Q _{gs}	Gate-Source Charge		-	6	-	nC
Q _{gd}	Gate-Drain Charge		-	15	-	nC
Source-Drain Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0 V, I _F =5.5 A	-	0.9	1.2	V
Q _{rr}	Reverse Recovery Time	V _{DS} =100 V, I _F =5.5 A, di/dt=100 A/μs	-	245	-	μC
T _{rr}	Reverse Recovery Charge		-	3.5	-	ns

4. Electrical Characteristics

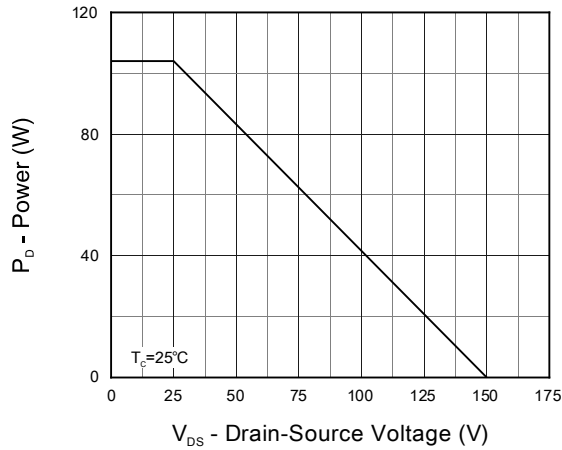


Fig 1. Output Characteristics

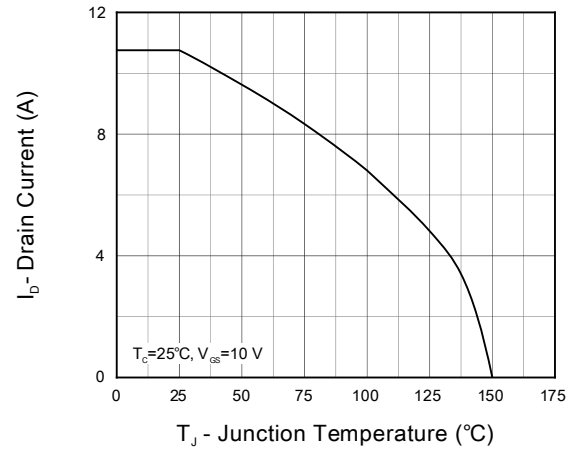


Fig 2. Current Capability

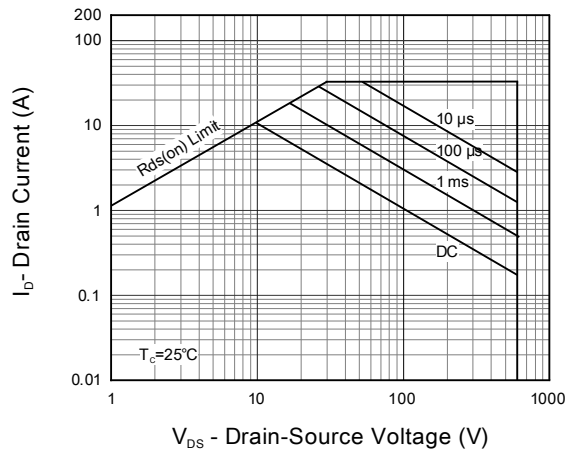


Fig 3. Safe Operation Area

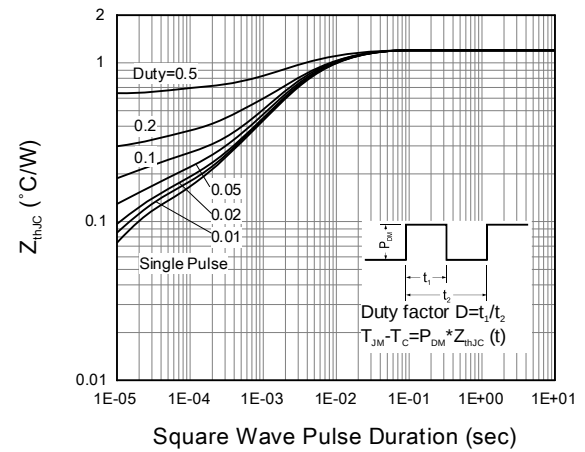


Fig 4. Transient Thermal Impedance

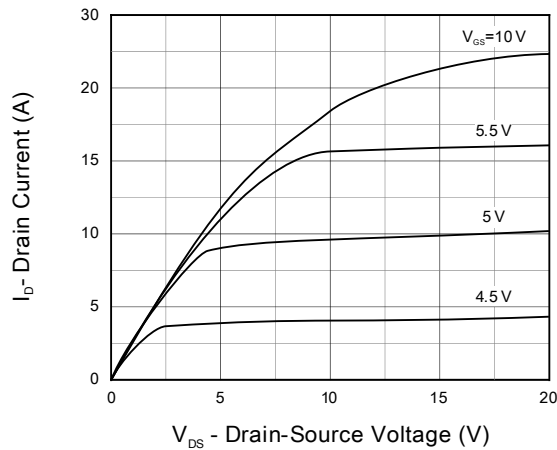


Fig 5. Output Characteristics
 $T_J = 25^\circ\text{C}$

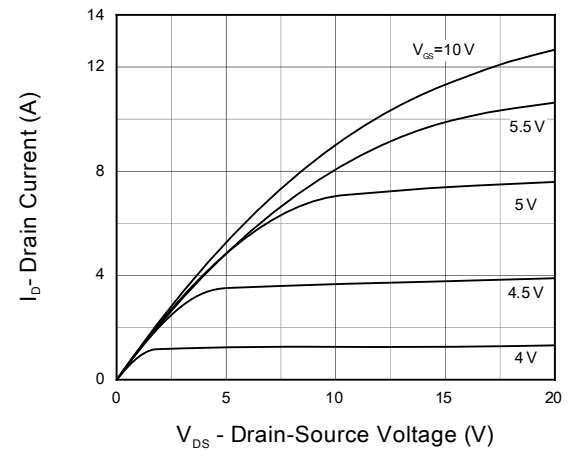


Fig 6. Output Characteristics
 $T_J = 150^\circ\text{C}$

5. Electrical Characteristics (cont.)

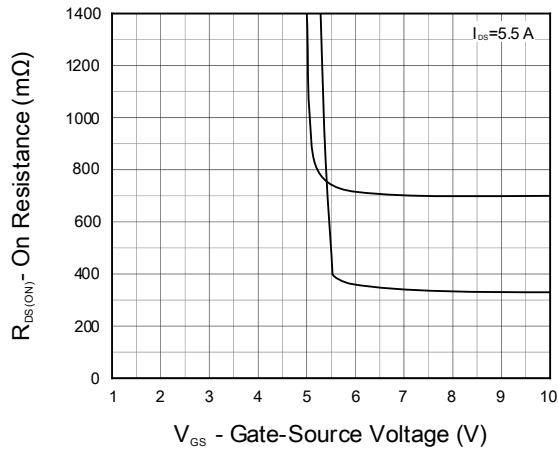


Fig 7. Transfer Characteristics

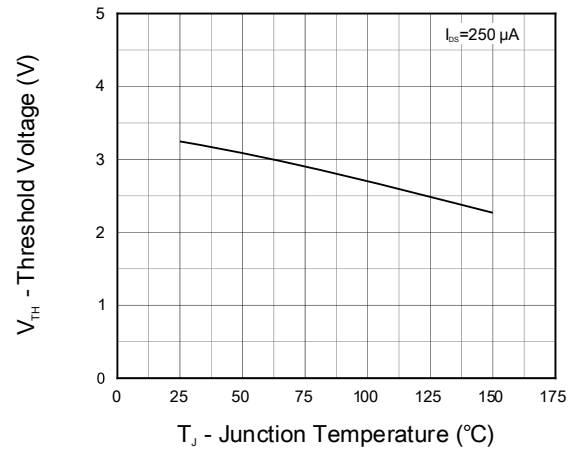


Fig 8. Normalized Threshold Voltage

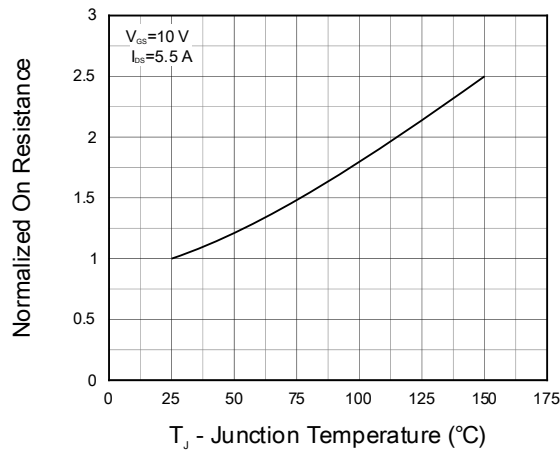


Fig 9. Normalized On Resistance

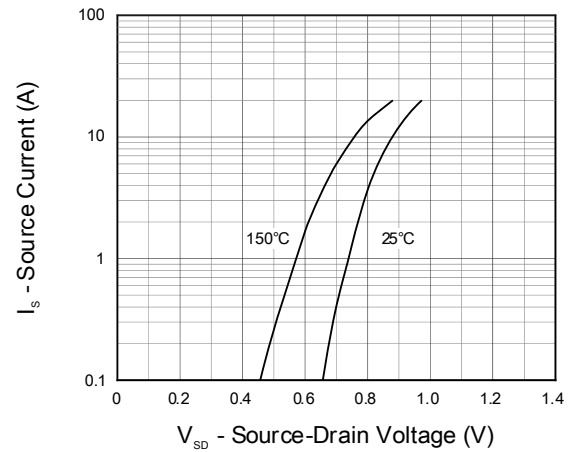


Fig 10. Diode Forward Current

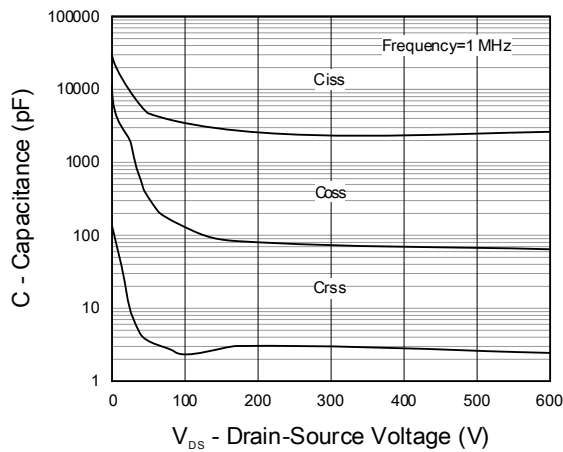


Fig 11. Capacitance

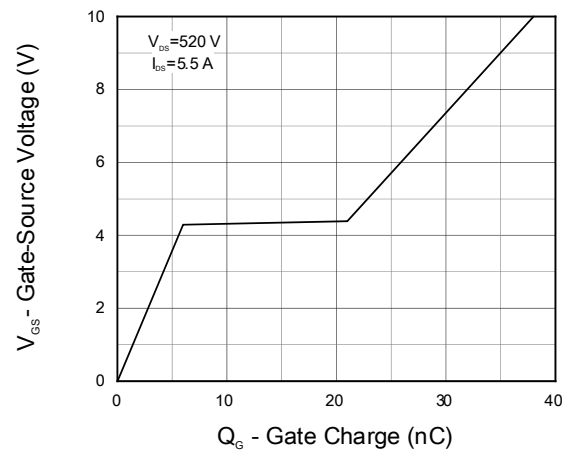
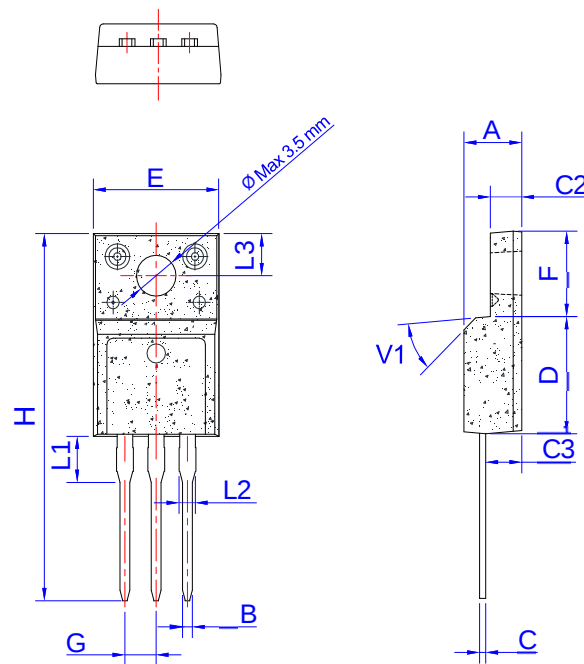


Fig 12. Gate Charge

5. Package Mechanical Data

TO-220F Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	4.50		4.90
B	0.74	0.80	0.83
C	0.47		0.65
C2	2.45		2.75
C3	2.60		3.00
D	8.80		9.30
E	9.80		10.4
F	6.40		6.80
G		2.54	
H	28.0		29.8
L1		3.63	
L2	1.14		1.70
L3		3.30	
V1		45°	