

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Super Trench
- ☒ Advanced trench cell design

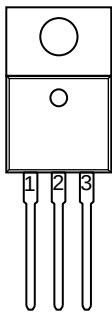
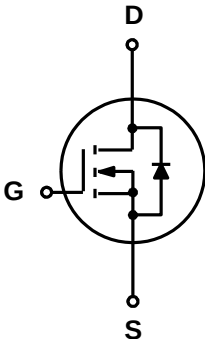
1.2 Applications

- ☒ BMS appliances
- ☒ Power appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 85\text{ V}$
- ☒ $P_{\text{tot}} \leq 158\text{ W}$
- ☒ $I_D \leq 238\text{ A}$
- ☒ $R_{\text{DS(ON)}} \leq 2.8\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TO-220	
2	Drain(D)		
3	Source(S)		

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C=25^{\circ}\text{C}$	-	85	V
V_{GS}	Gate-Source Voltage	$T_C=25^{\circ}\text{C}$	-	± 20	V
$I_D^{*, **}$	Drain Current (DC)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	238	A
$I_{DM}^{*, **, ***}$	Drain Current (Pulsed)	$T_C=25^{\circ}\text{C}, V_{GS}=10\text{ V}$	-	900	A
P_{tot}^{*}	Drain power dissipation	$T_C=25^{\circ}\text{C}$	-	158	W
T_{stg}	Storage Temperature		-55	150	$^{\circ}\text{C}$
T_J	Junction Temperature		-	150	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C=25^{\circ}\text{C}$	-	238	A
E_{AS}^{*}	Single Pulsed Avalanche Energy	$V_{DD}=50\text{ V}, L=0.1\text{ mH}$	-	900	mJ
$R_{\theta JA}^{*}$	Thermal Resistance-Junction to Ambient		-	62.5	$^{\circ}\text{C/W}$
$R_{\theta JC}^{*}$	Thermal Resistance-Junction to Case		-	0.8	

Notes:

- * Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec.}$
- ** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- *** Limited by bonding wire.

4. Marking Information

Product Name	Marking
KJ2R5N08C	2R5N08 YWWXXX YWWXXX : Date Code

5. Ordering Code

Product Name	Package	Reel size	Tape width	Quantity (pcs)
KJ2R5N08C	TO-220	N/A	N/A	50

Note: KJX defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C).

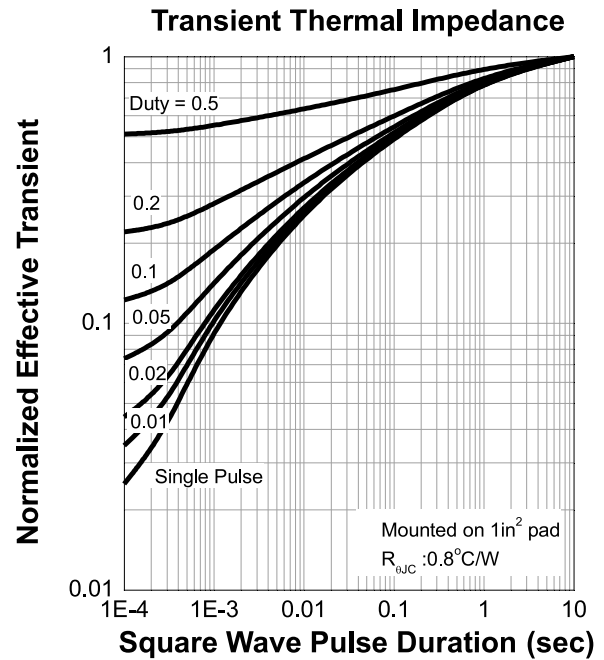
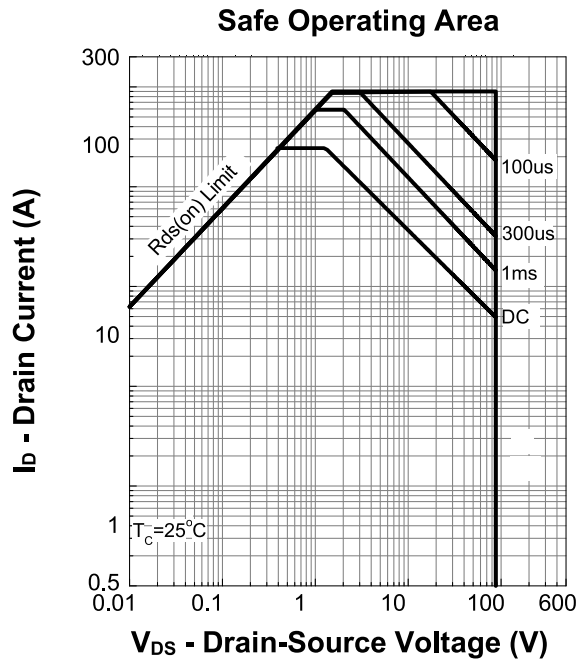
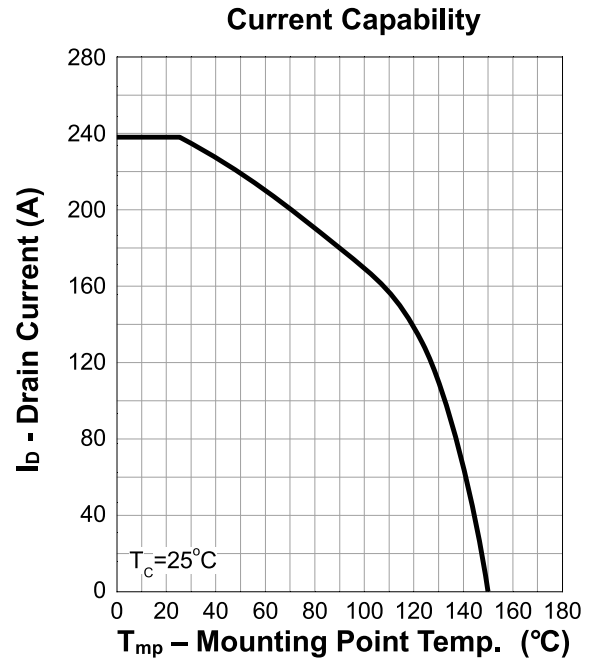
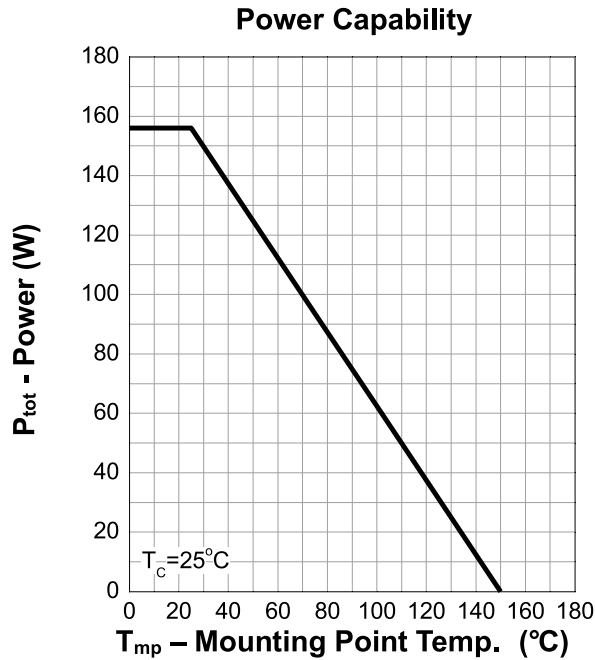
6. Electrical Characteristics (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0 V, I _{DS} =250 μA	85	97	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} =64 V, V _{GS} =0 V	-	-	1	μA
		T _J =85°C	-	-	30	μA
I _{GSS}	Gate Leakage Current	V _{GS} =0 V, V _{GS} =±20 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} =10 V, I _{DS} =30 A	-	2.5	2.8	mΩ
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =30 A, V _{GS} =0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} =30 A, V _{GS} =0 V dI _{SD} /dt=100 A/μs	-	62	-	ns
Q _{rr}	Reverse Recovery Charge		-	83	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} =0 V, V _{DS} =40 V Frequency=1 MHz	-	5591	-	pF
C _{oss}	Output Capacitance		-	744	-	
C _{rss}	Reverse Transfer Capacitance		-	75	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} =40 V, V _{GEN} =10 V, R _G =4.5 Ω, R _L =1.3 Ω, I _{DS} =30 A	-	23	-	ns
t _r	Turn-on Rise Time		-	65	-	
t _{d(off)}	Turn-off Delay Time		-	71	-	
t _f	Turn-off Fall Time		-	73	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =40 V, V _{GS} =10 V, I _{DS} =30 A	-	101	-	nC
Q _{gs}	Gate-Source Charge		-	28	-	
Q _{gd}	Gate-Drain Charge		-	25	-	

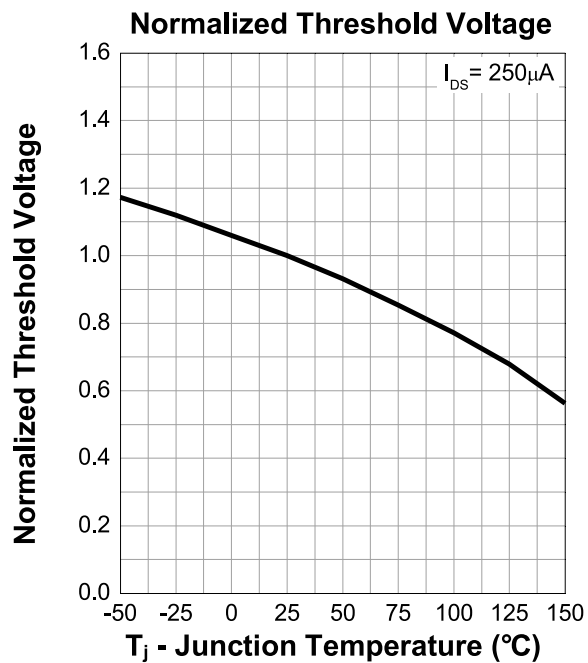
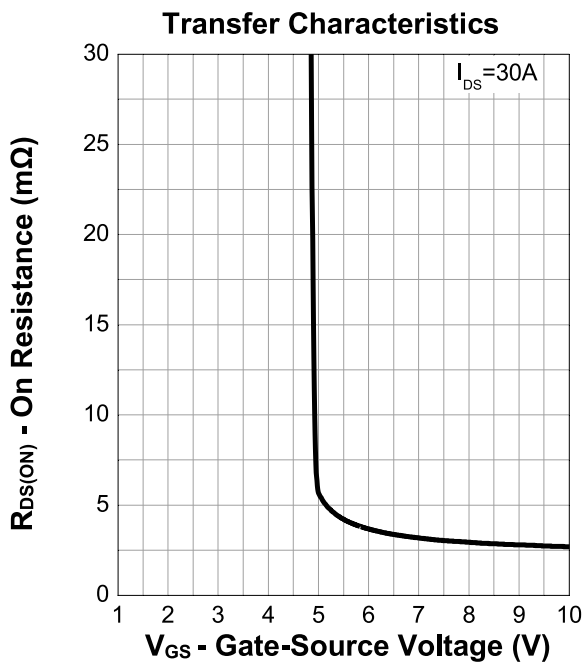
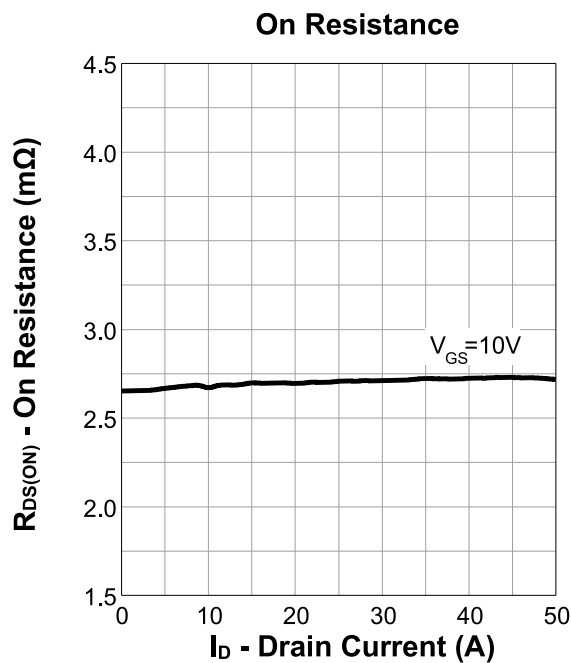
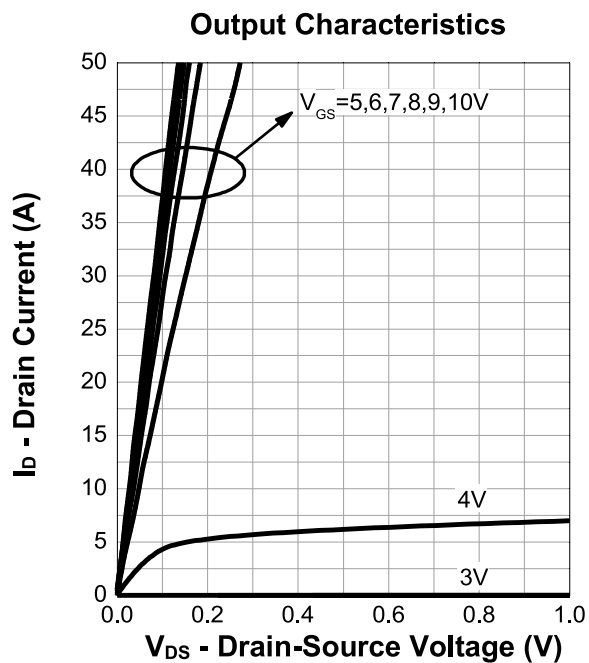
Notes:

- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

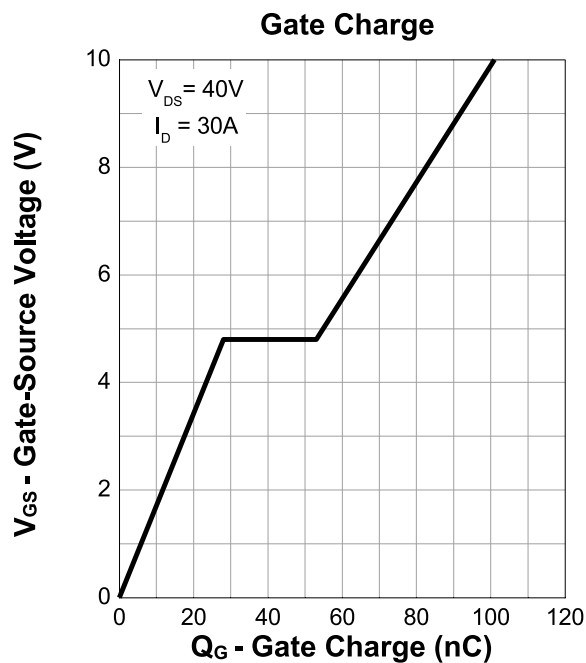
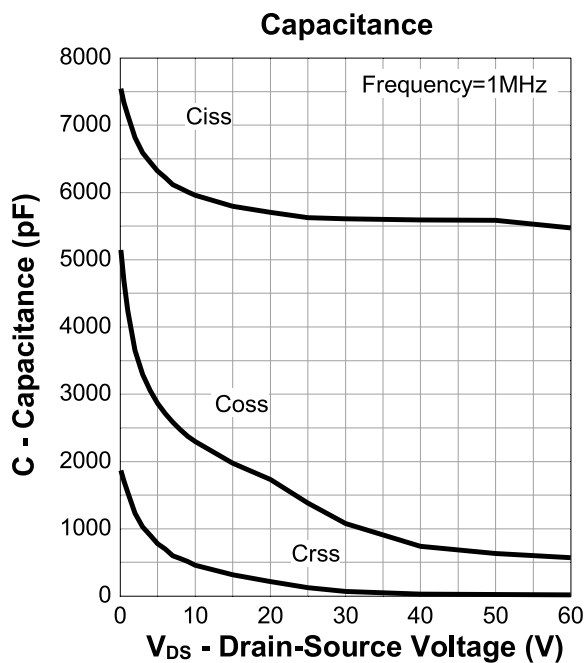
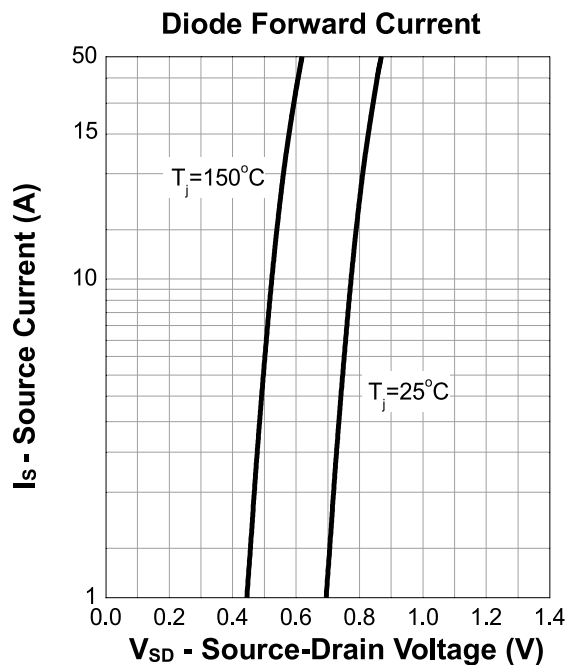
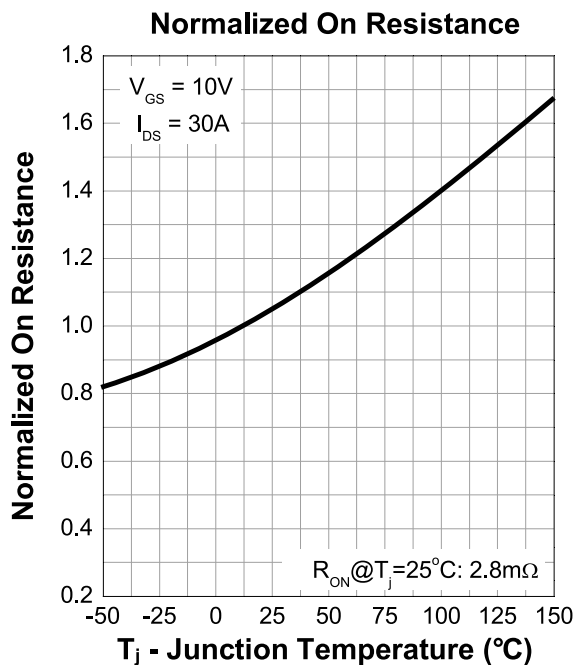
7. Typical Characteristics



7. Typical Characteristics (cont.)

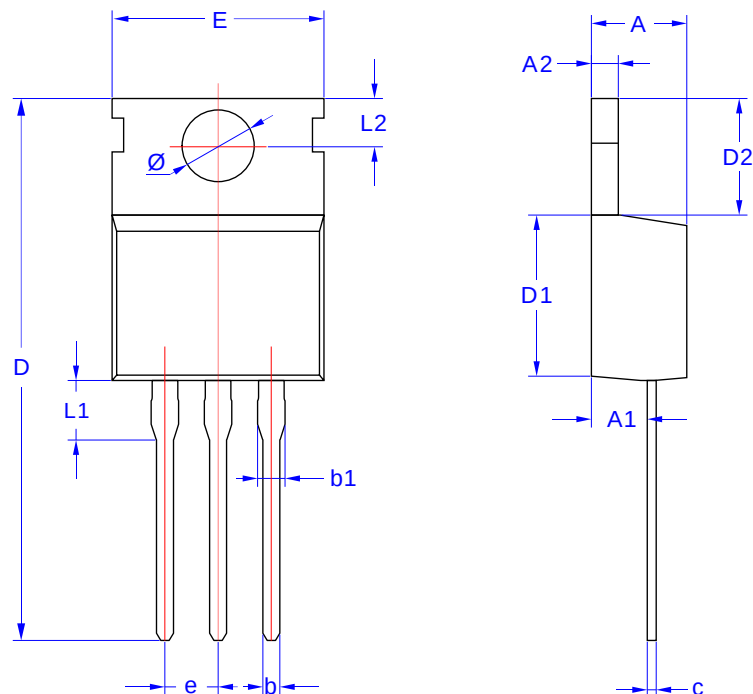


7. Typical Characteristics (cont.)



8. Package Dimensions

TO-220 Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	4.24	4.70
A1	2.20	3.00
A2	1.15	1.40
b	0.70	0.95
b1	1.14	1.70
c	0.40	0.60
D	28.0	29.8
D1	8.80	9.90
D2	6.25	6.90
E	9.70	10.50
L1	3.80	
L2	2.40	3.00
e	2.54 BSC	
ϕ	3.60	