

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Advanced trench cell design

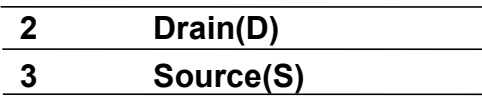
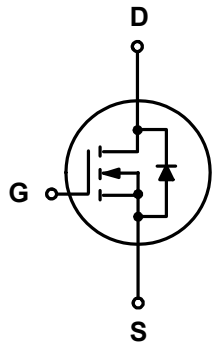
1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

1.3 Quick reference

- $BV \cong 60\text{ V}$
- $R_{DS(ON)} \leq 50\text{m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 15\text{ W}$
- $R_{DS(ON)} \leq 58\text{m}\Omega @ V_{GS} = 4.5\text{ V}$
- $I_D \leq 10\text{ A}$

2. Pin Description

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

**Top View
SOT89**

3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V _{DS}	Drain-Source Voltage	T _C = 25 °C	-	60	V
V _{GS}	Gate-Source Voltage	T _C = 25 °C	-	±20	V
I _D	Drain Current (DC)	T _C = 25 °C, V _{GS} = 10 V	-	10	A
		T _C = 100 °C, V _{GS} = 10 V	-	8	A
I _{DM} ^{*,***}	Drain Current (Pulsed)	T _C = 25 °C, V _{GS} = 10 V	-	20	A
P _{tot}	Drain power dissipation	T _C = 25 °C	-	35	W
T _{stg}	Storage Temperature		-55	150	°C
T _J	Junction Temperature		-	150	°C
I _S	Continuous-Source Current	T _C = 25 °C	-	20	A
R _{θJA} ^{**}	Thermal Resistance- Junction to Ambient		-	50	°C/W
R _{θJC} ^{**}	Thermal Resistance- Junction to Case		-	3.5	

Notes :

- * Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- ** Mounted on Large Heat Sink
- *** limited by bonding wire

4. Marking Information

Product Name	Marking
KJ6040S	<div style="display: inline-block; border: 1px solid black; padding: 2px;"> SN60N15M YWWXXX </div> YWW : Date Code

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ6040S	SOT89-3			1000	

Note: KJAIJEXIN 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 ($T_A=25^\circ$ Unless Otherwise Noted)

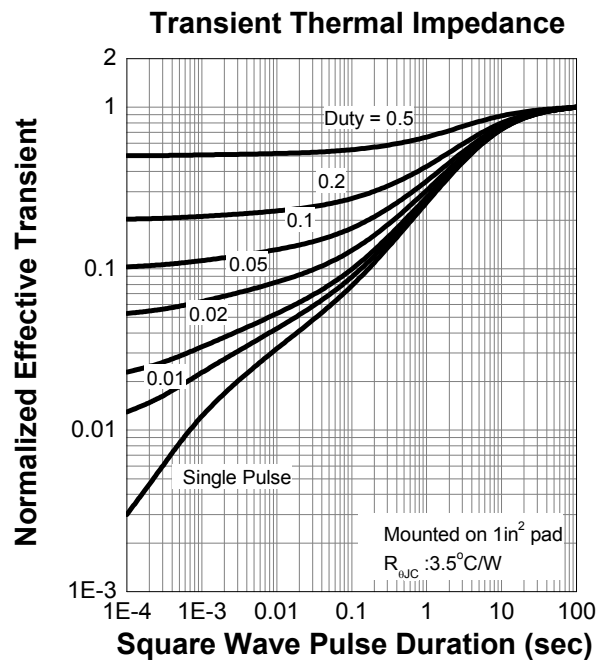
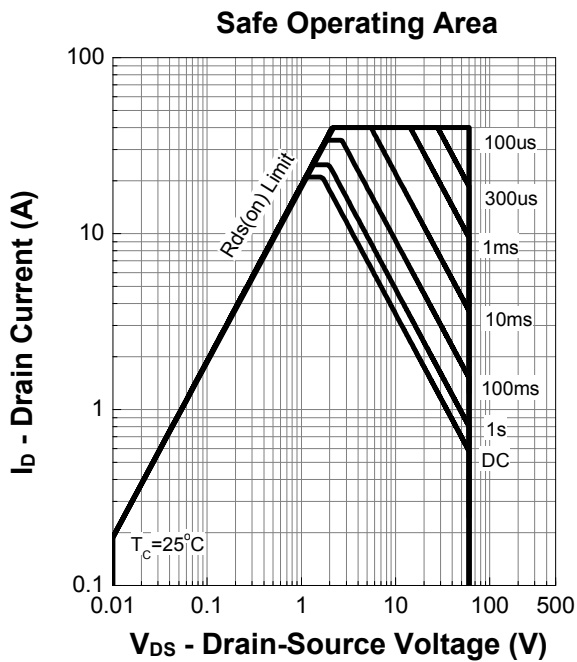
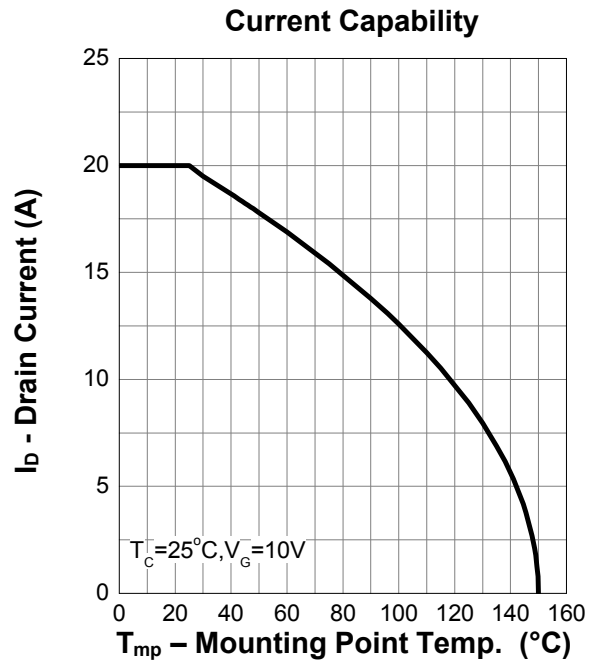
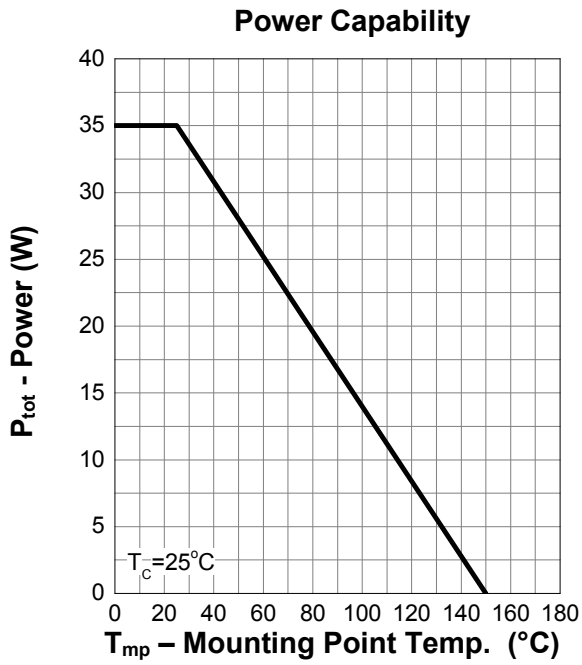
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	1.0	-	2.0	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 6\text{ A}$	-	44	50	m Ω
		$V_{GS} = 4.5\text{ V}, I_{DS} = 4\text{ A}$	-	50	58	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 6\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 6\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	26	-	nS
Q_{rr}	Reverse Recovery Charge		-	2.8	-	μC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 30\text{ V}$ Frequency = 1 MHz	-	651	-	pF
C_{oss}	Output Capacitance		-	28	-	
C_{riss}	Reverse Transfer Capacitance		-	26	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 5\ \Omega,$ $I_{DS} = 6\text{ A}$	-	5	-	nS
t_r	Turn-on Rise Time		-	21	-	
$t_d(off)$	Turn-off Delay Time		-	15	-	
t_f	Turn-off Fall Time		-	23	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 6\text{ A}$	-	12	-	nC
Q_{gs}	Gate-Source Charge		-	3	-	
Q_{gd}	Gate-Drain Charge		-	1.5	-	

Notes :

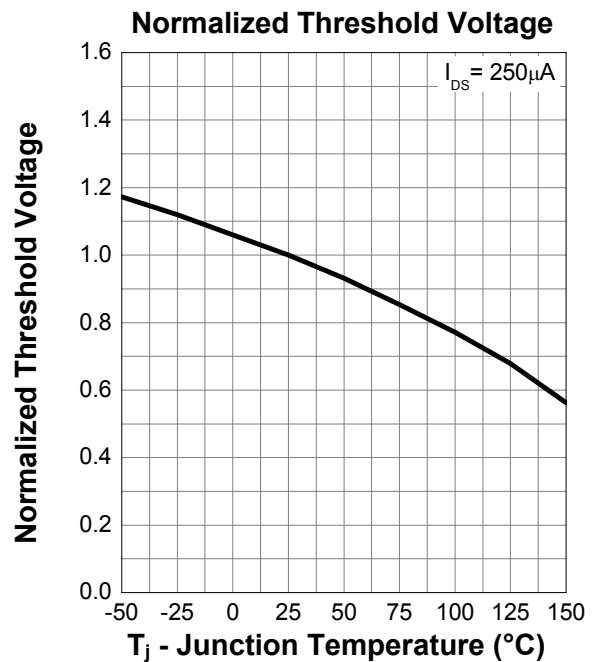
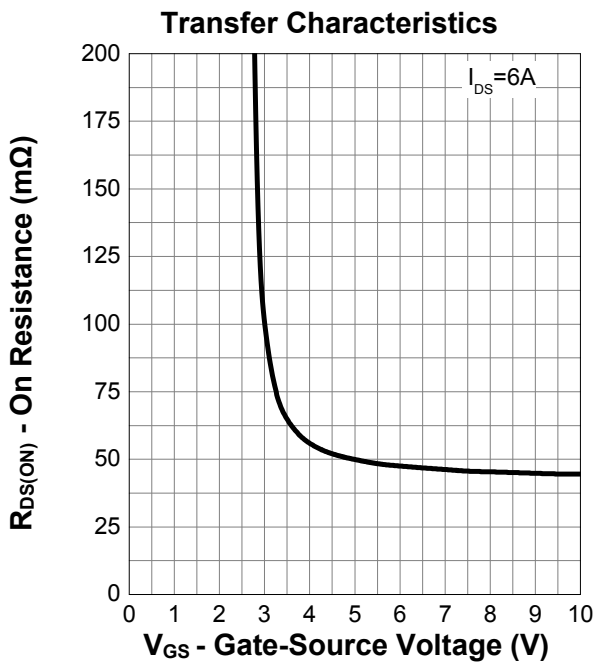
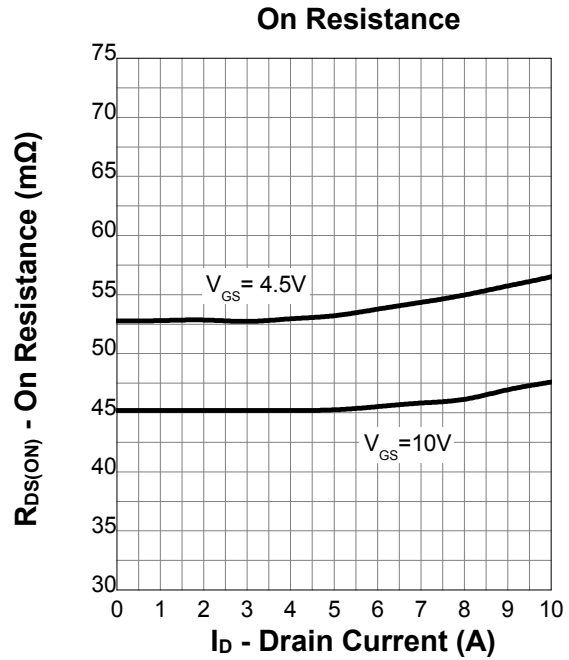
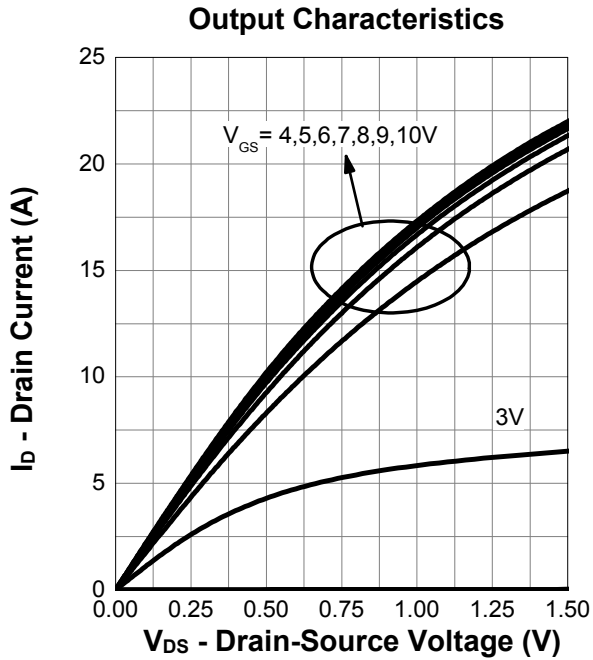
 a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

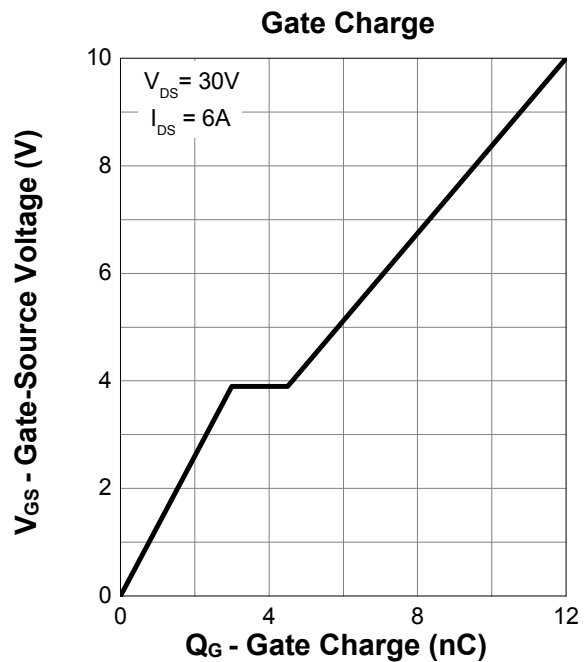
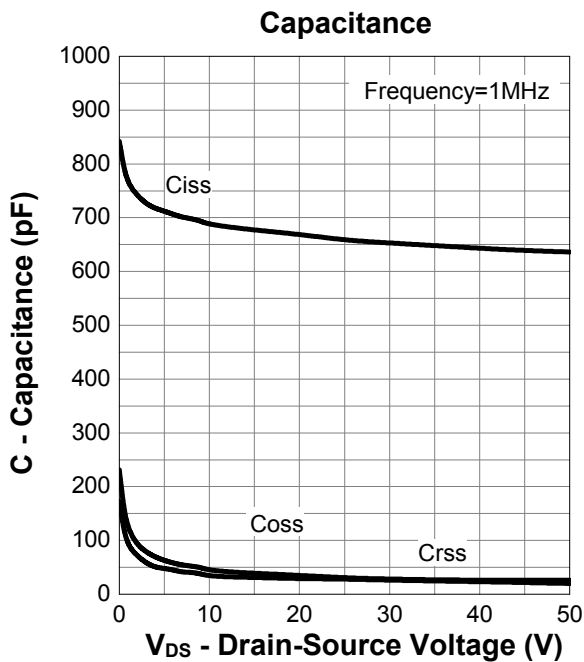
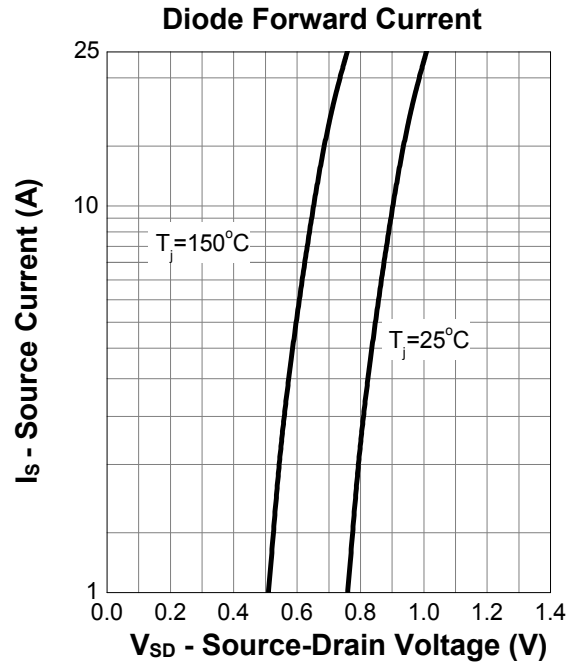
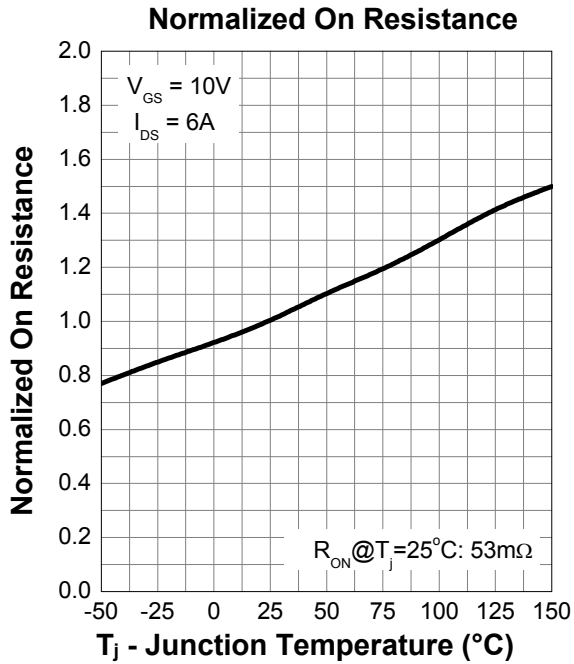
7. Typical Characteristics



7. Typical Characteristics (cont.)

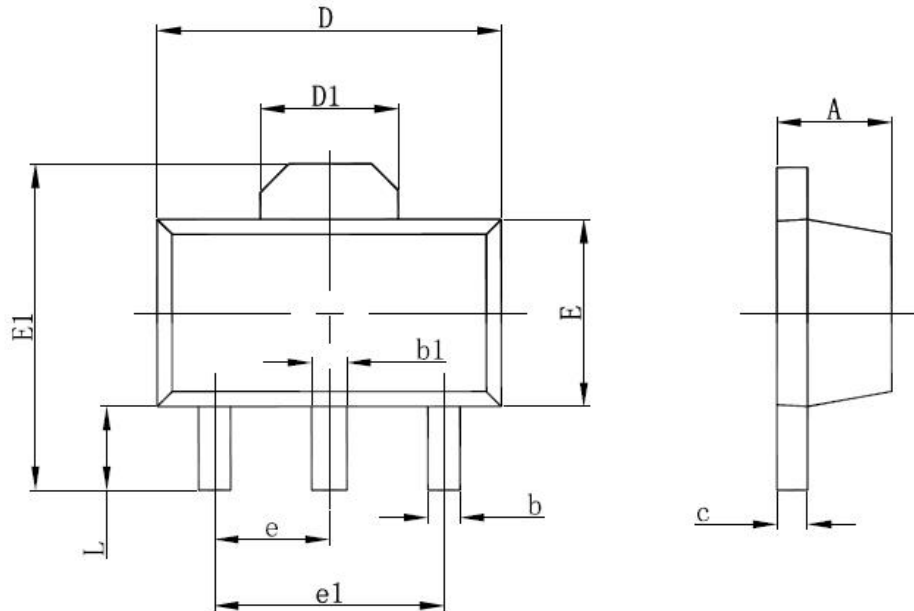


7. Typical Characteristics (cont.)



8.Package Dimensions

SOT89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047