

## P-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- SGT Technology
- Fast Switching
- Low Gate Charge and  $R_{DS(ON)}$
- Low Reverse transfer capacitances

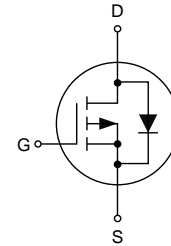
#### 1.2 Applications

- Battery protection
- Hard switched and high frequency circuits
- Power management

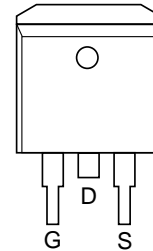
#### 1.3 Quick reference

- $V_{DS} = -60\text{ V}$
- $I_D = -100\text{ A}$
- $R_{DS(ON)} \leq 6.5\text{ m}\Omega @ V_{GS} = 10\text{ V}$  (Type: 5.5 m $\Omega$ )

#### Schematic Diagram



#### Pin Assignment



Top View  
TO-263

### 2. Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Quantity(pcs)
KJ100P06D	TO-263	KJ100P06D	13 inch	800

### 3. Absolute Maximum Ratings ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Values	Unit
$V_{DS}$	Drain-Source Voltage	-60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current @ $T_c=25^\circ\text{C}$	-100	A
	Continuous Drain Current @ $T_c=100^\circ\text{C}$	-64	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-282	A
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	800	mJ
$P_D$	Power Dissipation @ $T_c=25^\circ\text{C}$	150	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55~150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient <sup>1</sup>	60	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance from Junction to Case <sup>1</sup>	0.83	$^\circ\text{C/W}$

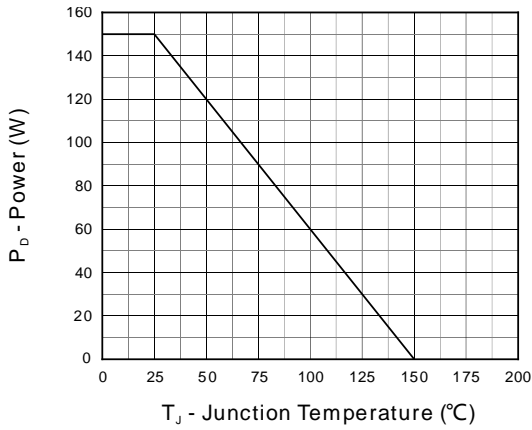
## 4. Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0 V, I <sub>D</sub> =-250 μA	-60	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-60 V, V <sub>GS</sub> =0 V	-	-	-1.0	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±20 V	-	-	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250 μA	-1.6	-2.0	-2.4	V
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =-10 V, I <sub>D</sub> =-15 A	-	5.5	6.5	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>GS</sub> =-5 V, I <sub>D</sub> =-10 A	-	30	-	S
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0 V, V <sub>DS</sub> =-30 V, f=1.0 MHz	-	3060	-	pF
C <sub>oss</sub>	Output Capacitance		-	620	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	20	-	
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0 V, V <sub>DS</sub> Open	-	2.0	-	Ω
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =-30 V, I <sub>D</sub> =-20 A, R <sub>G</sub> =3 Ω, R <sub>L</sub> =0.75 Ω, V <sub>GS</sub> =-10 V	-	4.5	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	2.5	-	
t <sub>d(off)</sub>	Turn-off Delay Time		-	14.5	-	
t <sub>f</sub>	Turn-off Fall Time		-	3.5	-	
<b>Gate Charge Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DD</sub> =-30 V, I <sub>D</sub> =-15 A, V <sub>GS</sub> =-10 V	-	56	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	11	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	9	-	
<b>Diode Characteristics</b>						
I <sub>S</sub>	Diode Forward Current	T <sub>C</sub> =25°C	-	-	-100	A
I <sub>SM</sub>	Pulse Diode Forward Current		-	-	-280	A
V <sub>SD</sub>	Body Diode Voltage	I <sub>SD</sub> =-15 A, V <sub>GS</sub> =0 V	-	-	-1.2	V
T <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =-15 A, V <sub>GS</sub> =-30 V, dI <sub>F</sub> /dt=100 A/μs	-	60	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	105	-	nC

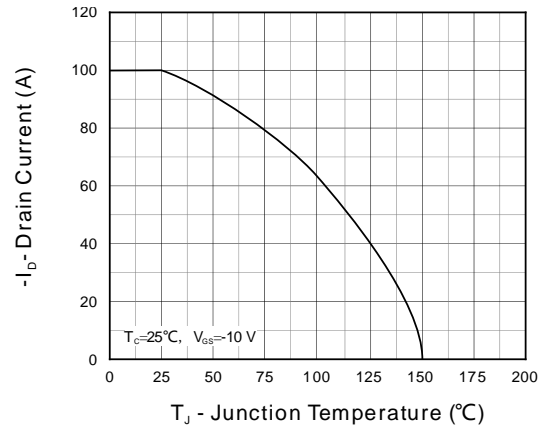
Notes:

1. Repetitive rating; pulse width limited by maximum junction temperature
2. V<sub>DD</sub>=-30 V, L=1.0 mH, R<sub>G</sub>=25 Ω, Starting T<sub>J</sub>=25°C

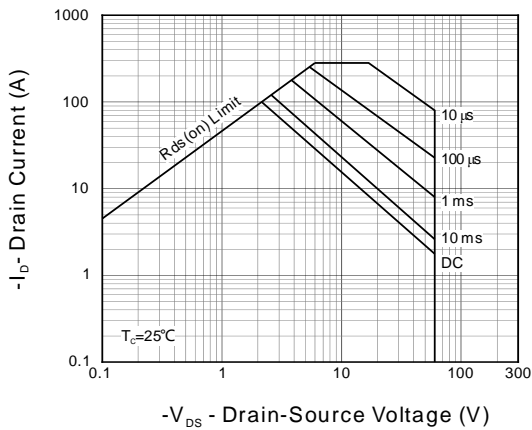
## 5. Typical Characteristics



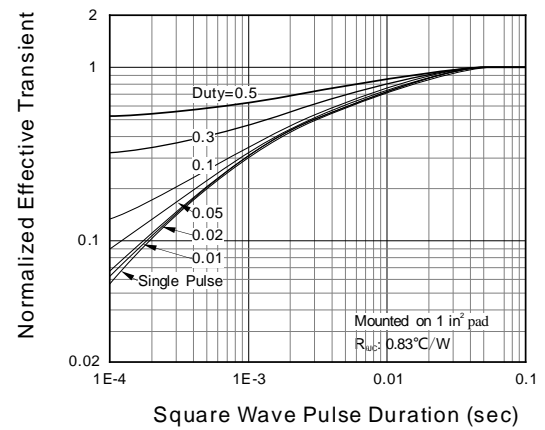
**Fig 1. Power Dissipation**



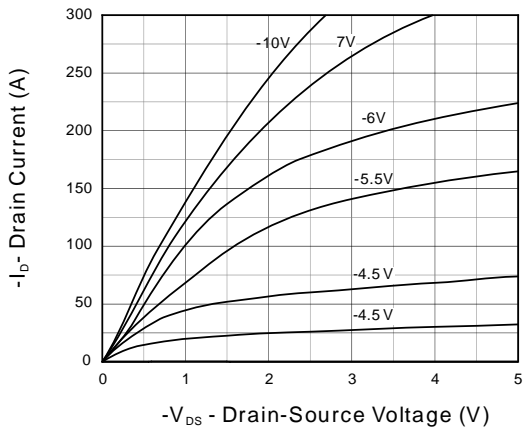
**Fig 2. Current Capability**



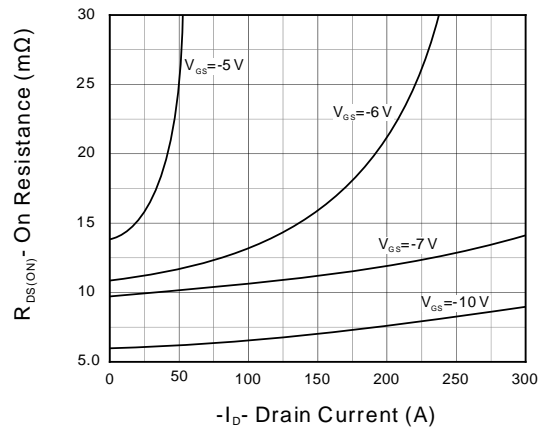
**Fig 3. Safe Operation Area**



**Fig 4. Transient Thermal Impedance**

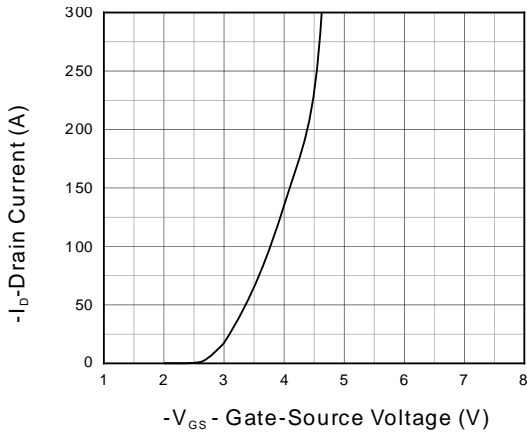


**Fig 5. Output Characteristics**

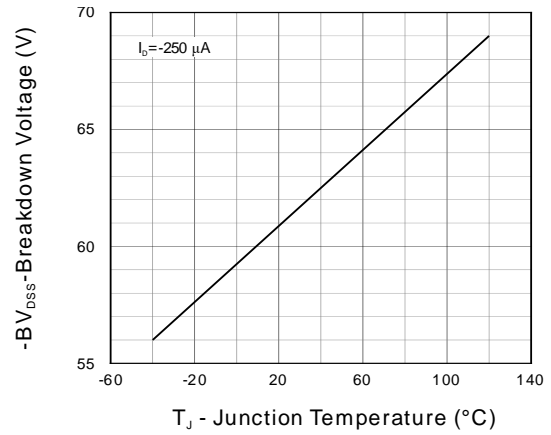


**Fig 6. On Resistance**

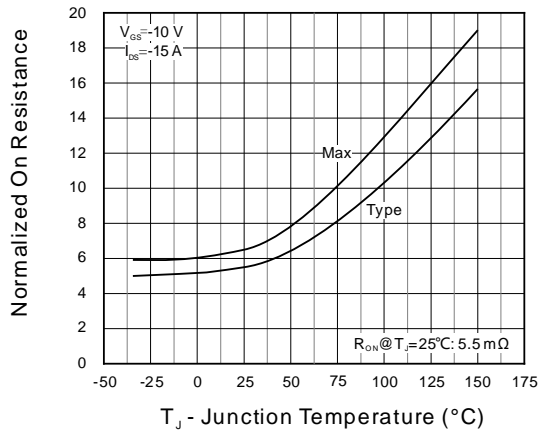
## 5. Typical Characteristics (Cont.)



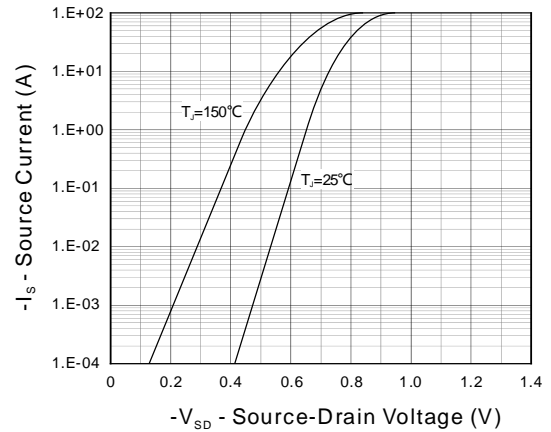
**Fig 7. Transfer Characteristics**



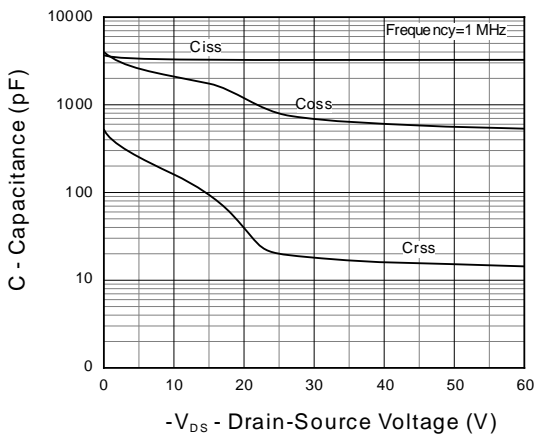
**Fig 8. Drain-source breakdown voltage**



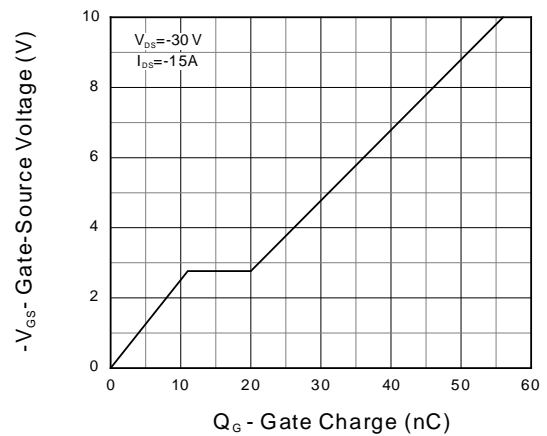
**Fig 9. Normalized On Resistance**



**Fig 10. Diode Forward Current**



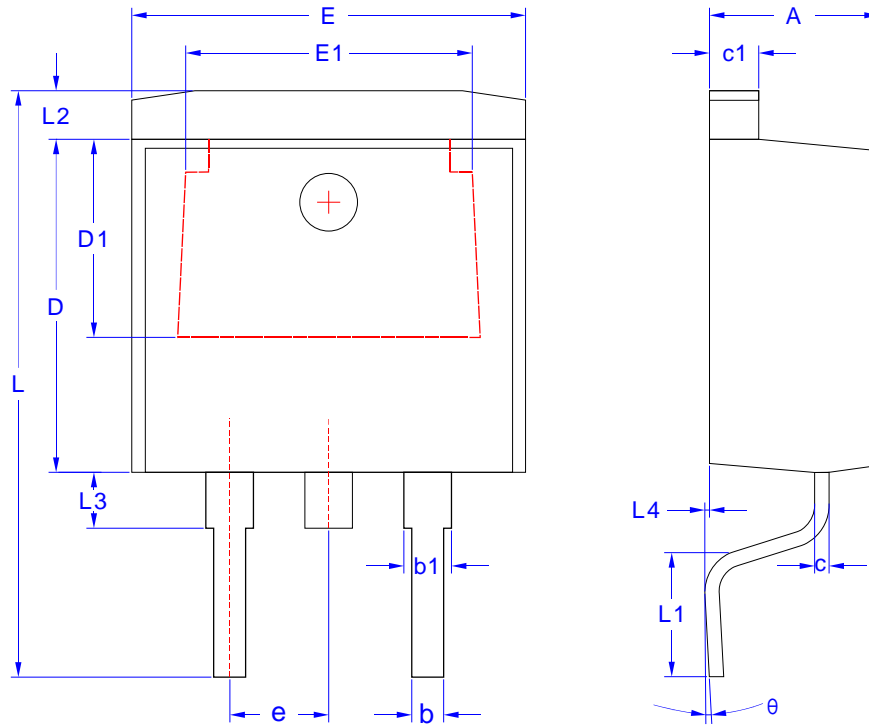
**Fig 11. Capacitance**



**Fig 12. Gate Charge**

## 6. Package Mechanical Data

### TO-263 Package



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	4.40	4.80
b	0.76	1.00
b1	1.17	1.47
c	0.36	0.50
c1	1.25	1.45
D	8.60	9.00
D1	5.10 REF	
E	9.80	10.40
E1	7.40 REF	
e	2.54 REF	
L	14.6	15.8
L1	2.29	2.79
L2	1.27 REF	
L3	1.50 REF	
L4	0.00	0.25
$\theta$	$0^\circ \pm 3^\circ$	