



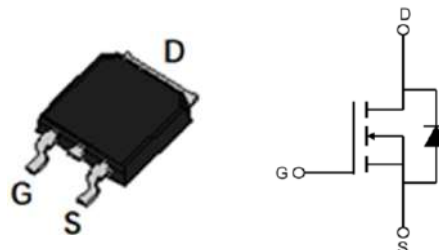
N-Channel Enhancement Mode Power MOSFET

PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(on)MAX}$	I_D
60V	$8.5m\Omega @ V_{GS}=10V$	80A

SCHEMATIC DIAGRAM

TO-252 PACKAGE



FEATURES

- 60V, 80 A
- $R_{DS(ON)} < 8.3m\Omega @ V_{GS} = 10V, I_D = 30A$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

MECHANICAL DATA

- Case : Molded plastic, TO-252
- Polarity : Shown above
- Terminals : Plated terminals, solderable per MIL-STD-750, Method 2026
- Epoxy : UL94-V0 rated flame retardant

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V _{DSS}	Drain-Source Voltage		60	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C = 25 °C	80	A
		T _C = 100 °C	50	A
I _{DM}	Pulsed Drain Current ^{note1}		320	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}		123	mJ
P _D	Power Dissipation	T _C = 25 °C	110	W
R _{θJC}	Thermal Resistance, Junction to Case		1.36	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +175	°C



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Electrical Characteristics (T_c=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V, T _J = 25℃	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance note3	V _{GS} =10V, I _D =30A	-	7.4	8.5	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A	20	-	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} = 0V, f = 1.0MHz	-	3300	-	pF
C _{oss}	Output Capacitance		-	274	-	pF
C _{rss}	Reverse Transfer Capacitance		-	255	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =20A, V _{GS} =10V	-	90	-	nC
Q _{gs}	Gate-Source Charge		-	9	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	18	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, R _L = 1Ω, R _G = 3Ω, V _{GS} =10V	-	8.5	-	ns
t _r	Turn-On Rise Time		-	7	-	ns
t _{d(off)}	Turn-Off Delay Time		-	40	-	ns
t _f	Turn-Off Fall Time		-	15	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _{SD} =20A, T _J = 25℃	-	-	1.2	V
t _{rr}	Reverse Recovery Time	T _J = 25℃, I _F =20A, di/dt =100A/μs	-	32	-	ns
Q _{rr}	Reverse Recovery Charge		-	45	-	nC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. V_{DD} = 30V, I_{AS}=22.2A, L=0.5mH, Starting T_J = 25°C

3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 0.5%



Typical Performance Characteristics

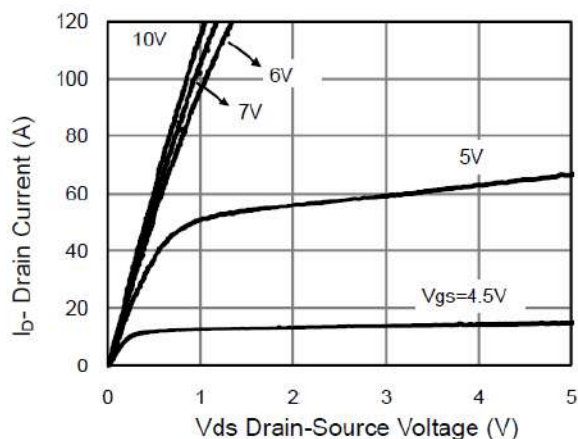


Figure 1 Output Characteristics

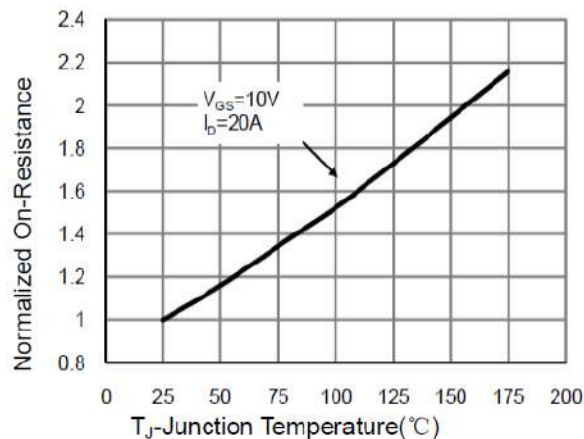


Figure 4 $R_{DS(on)}$ -Junction Temperature

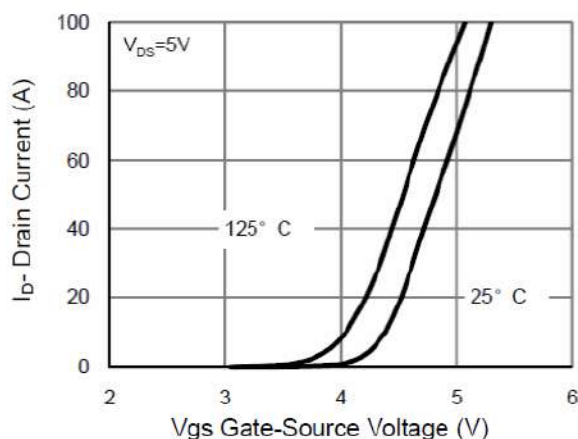


Figure 2 Transfer Characteristics

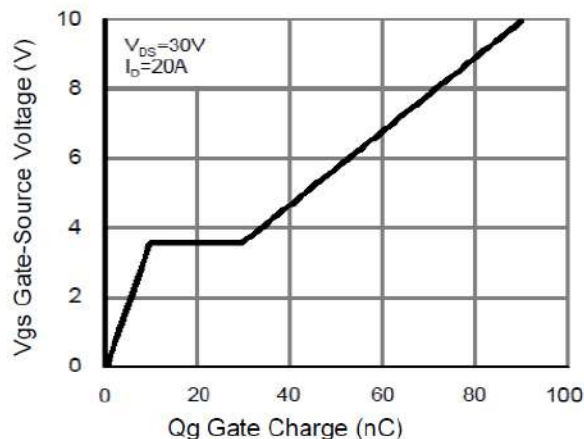


Figure 5 Gate Charge

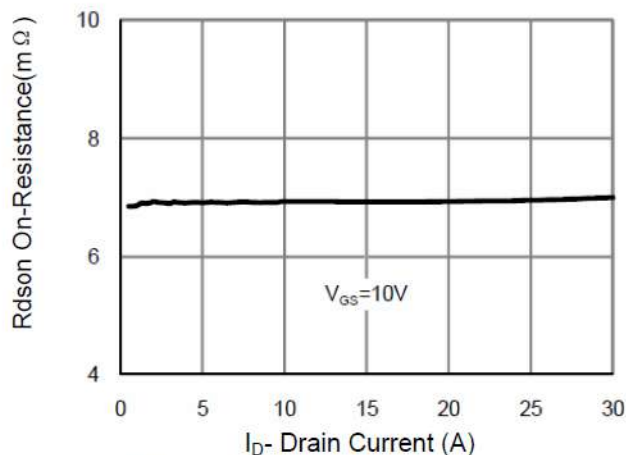


Figure 3 $R_{DS(on)}$ - Drain Current

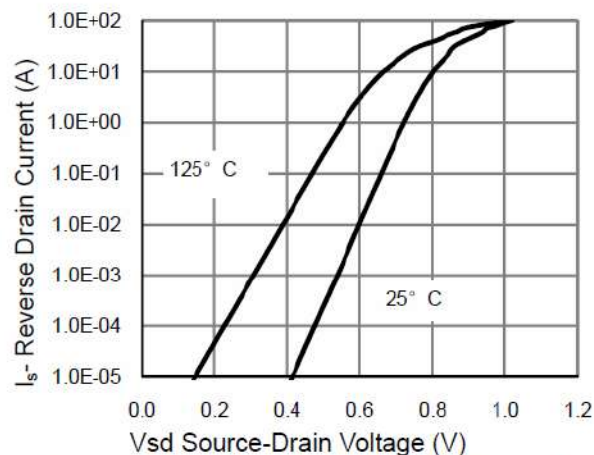


Figure 6 Source- Drain Diode Forward



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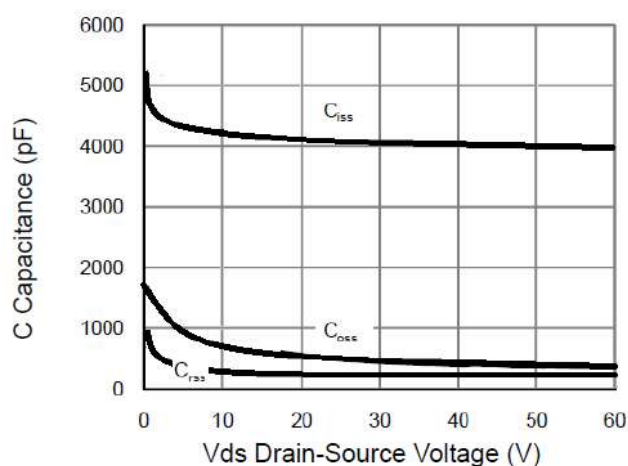


Figure 7 Capacitance vs Vds

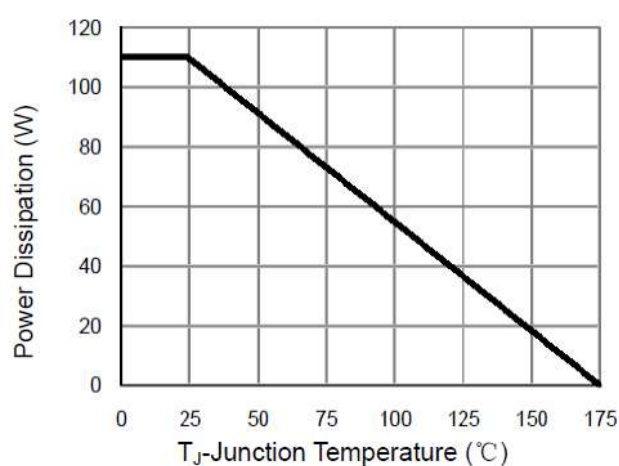


Figure 9 Power De-rating

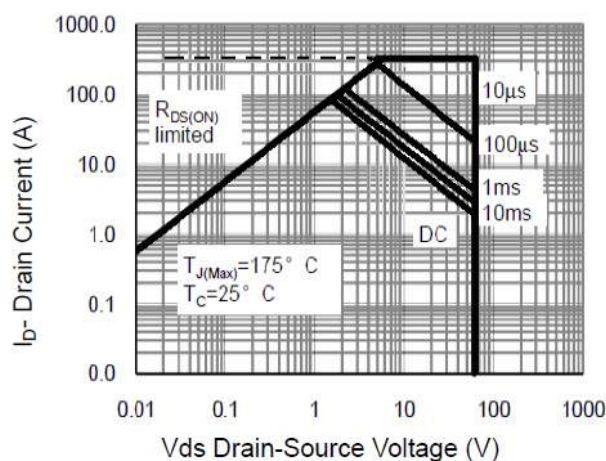


Figure 8 Safe Operation Area

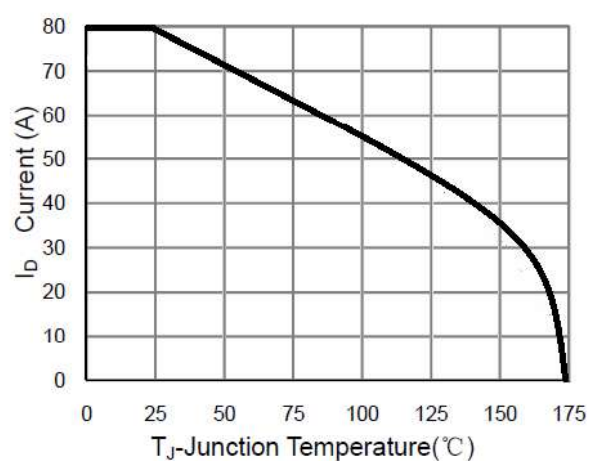


Figure 10 I_D Current- Junction Temperature

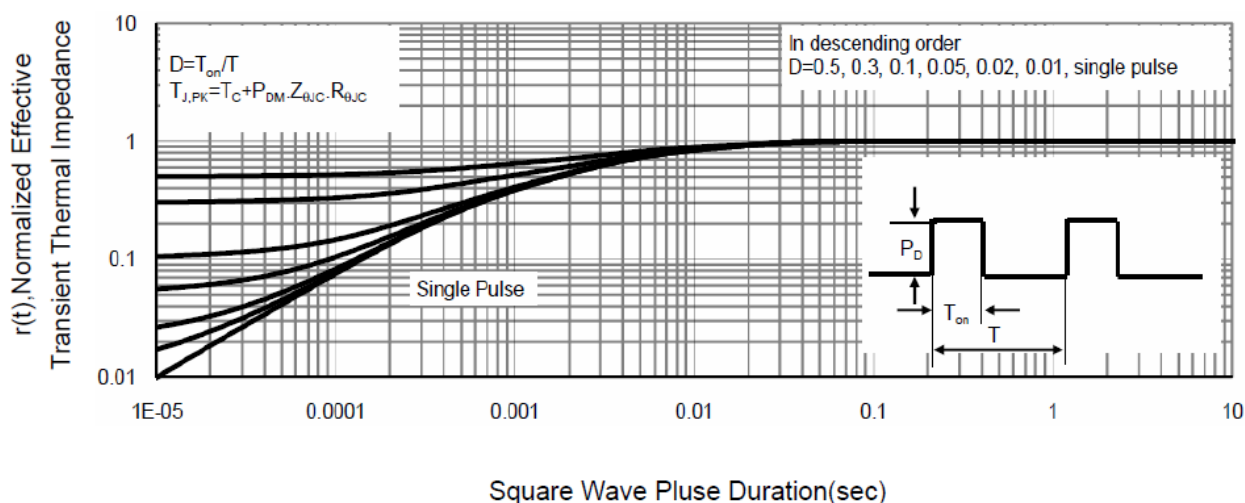


Figure 11 Normalized Maximum Transient Thermal Impedance



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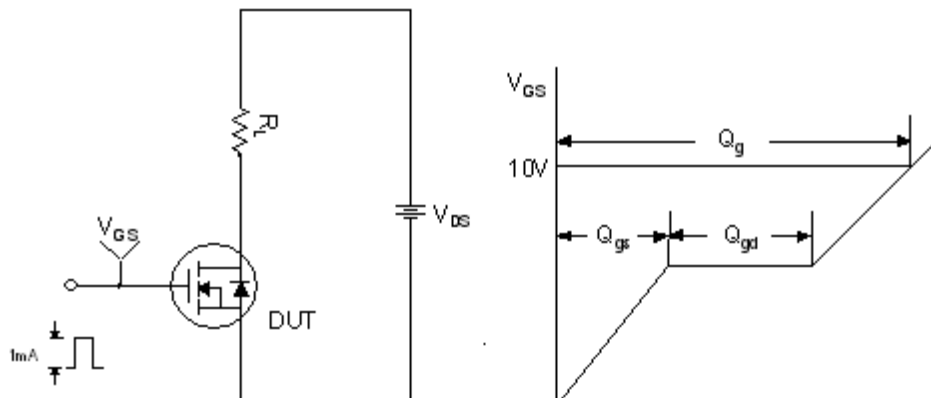


Figure 1. Gate Charge Test Circuit & Waveform

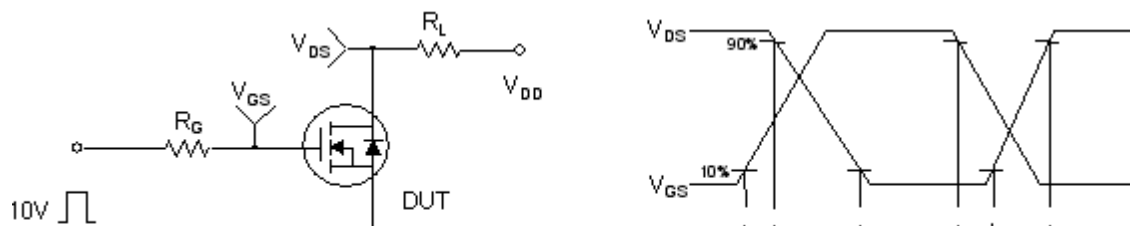


Figure 2. Resistive Switching Test Circuit & Waveforms

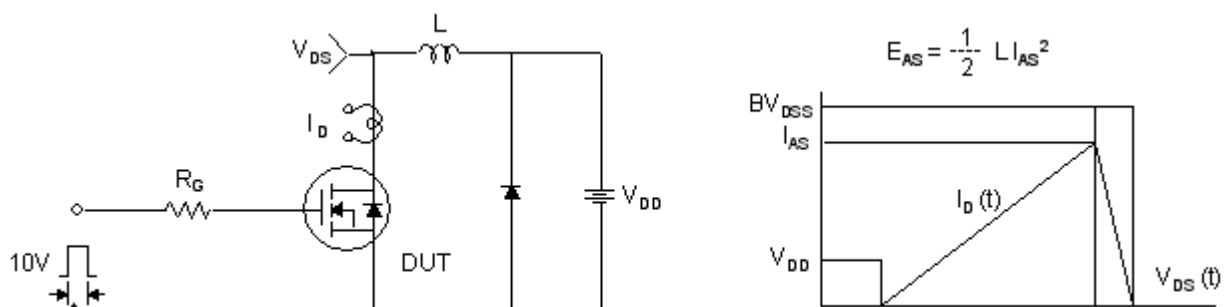
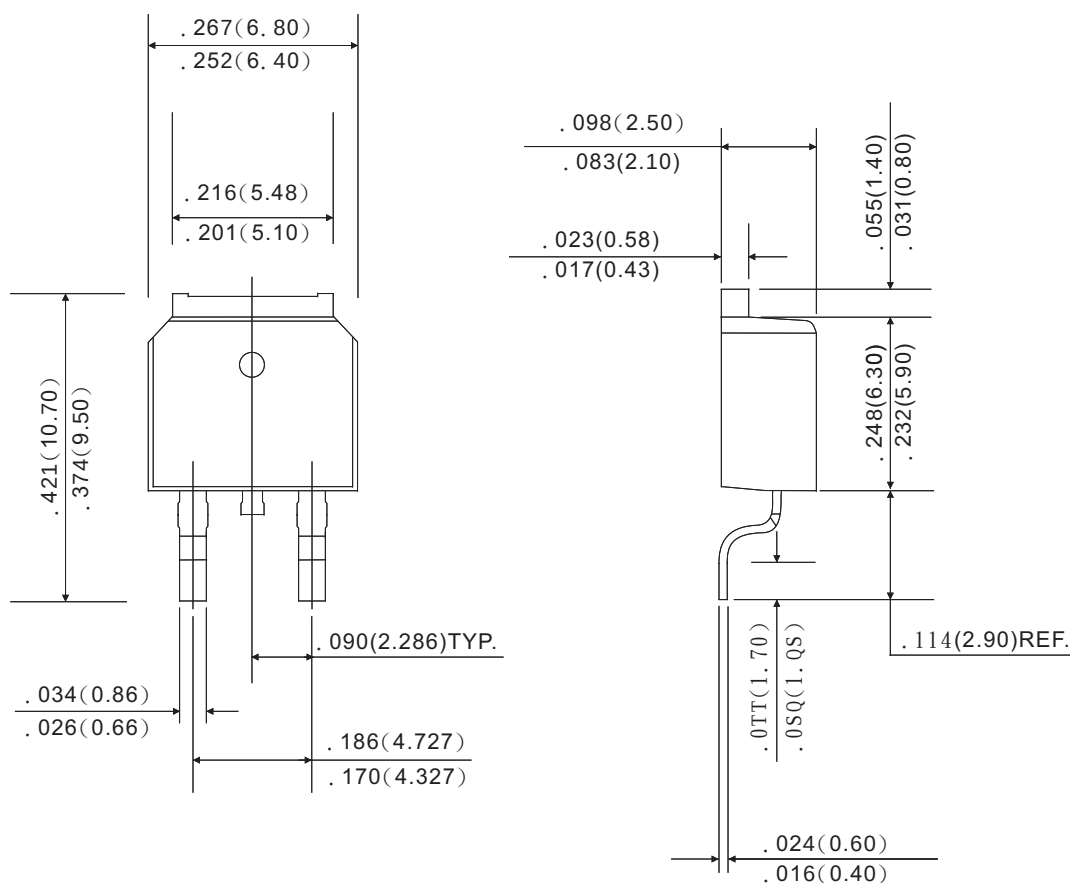


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms



Outline Drawing

TO-252(j)



Dimensions in inches and (millimeters)

Rev.B

**Ordering Information:**

Device PN	Packing
SJA80N06A -T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 2.5 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

(3) WS : Willas brand abbreviation, Label Type does not display

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