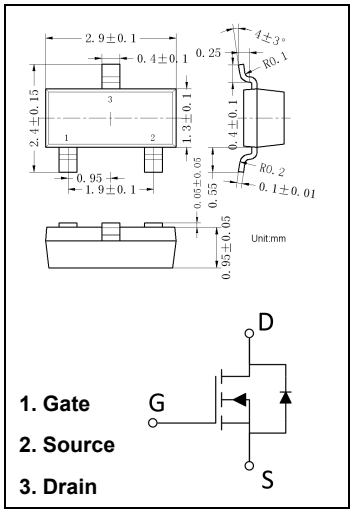
SOT-23 Plastic-Encapsulate MOSFETS

LJ2294B

N-Channel Enhancement Mode Power MOSFET



Features

- V_{DS} = 110V, I_D = 3A
- $R_{DS(ON)}$ <240mΩ @ V_{GS} = 10V (Typ:210mΩ)
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Marking: ln8

Maximum Ratings (T_a=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source voltage	110	V
V_{GS}	Gate-Source voltage	±20	
I_D	Drain Current-Continuous	3	A
I_{DM}	Pulsed Drain Current [1)]	10	
P_D	Power Dissipation [2)]	1.25	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JA}$	Maximum Junction-to-Ambient [2)]	100	°C/W

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

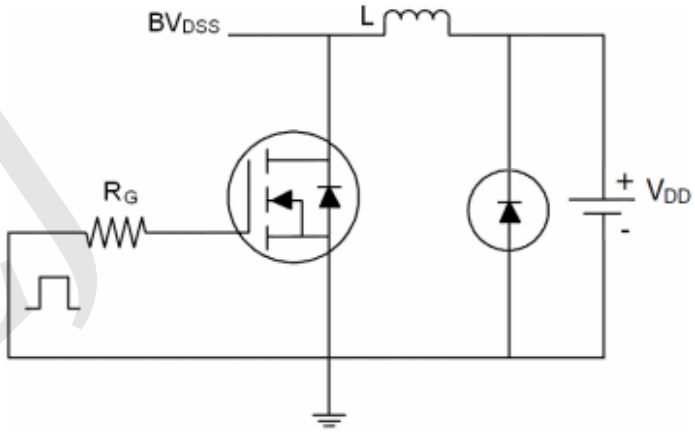
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	110	115		V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 110V, V_{GS} = 0V			1	μA
I_{GSS}	Gate-body Leakage current	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} = 10V, I_D = 1A		210	260	mΩ
g_{fs}	Forward Trans conductance	V_{DS} = 5V, I_D = 1A	1			S
Dynamic [4]						
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = 50V f = 1.0MHz		190		pF
C_{oss}	Output Capacitance			22		
C_{rss}	Reverse Transfer Capacitance			13		
Switching [4]						
Q_g	Total Gate Charge	V_{GS} = 10V, I_D = 1.3A, V_{DS} = 50V		5.2		nC
Q_{gs}	Gate-Source Charge			0.75		
Q_{gd}	Gate-Drain Charge			1.4		
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 50V, I_D = 1.3A, R_L = 39Ω V_{GS} = 10V, R_G = 1Ω		6		ns
t_r	Rise Time			10		
$t_{d(off)}$	Turn-Off Delay Time			10		
t_f	Fall Time			6		
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage [3]	I_S = 1A, V_{GS} = 0V			1.2	V
I_S	Maximum Body-Diode Continuous Current [2]				2	A

Notes

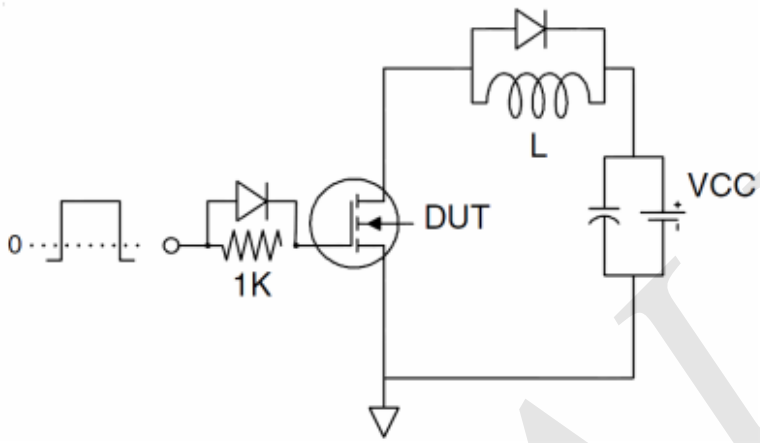
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Test Circuit

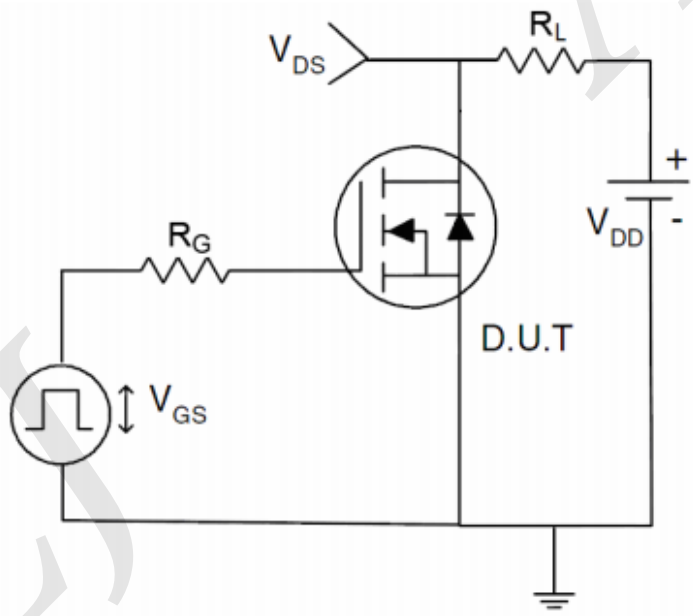
1) E_{AS} test circuit



2) Gate charge test circuit



3) Switch Time Test Circuit



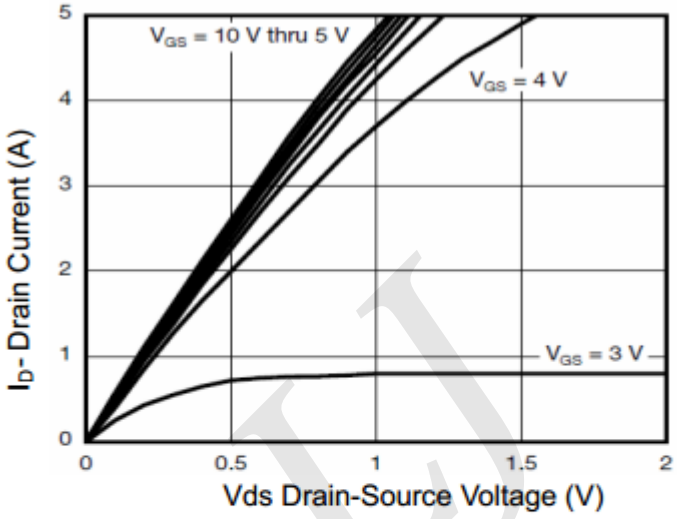


Figure 1 Output Characteristics

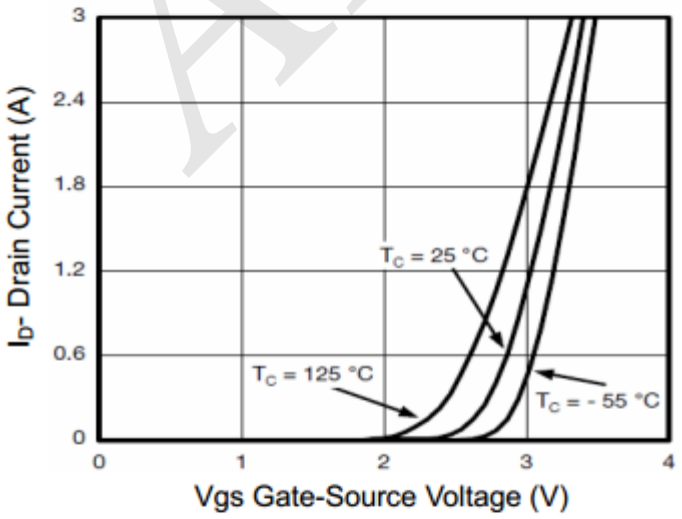


Figure 2 Transfer Characteristics

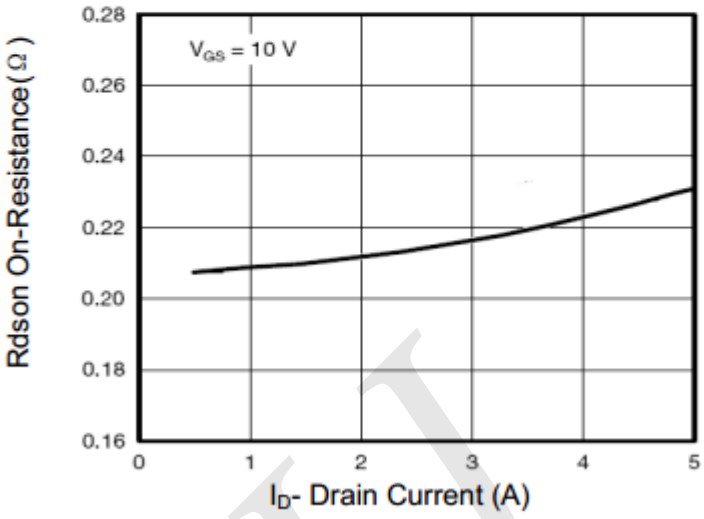


Figure 3 Rdson- Drain Current

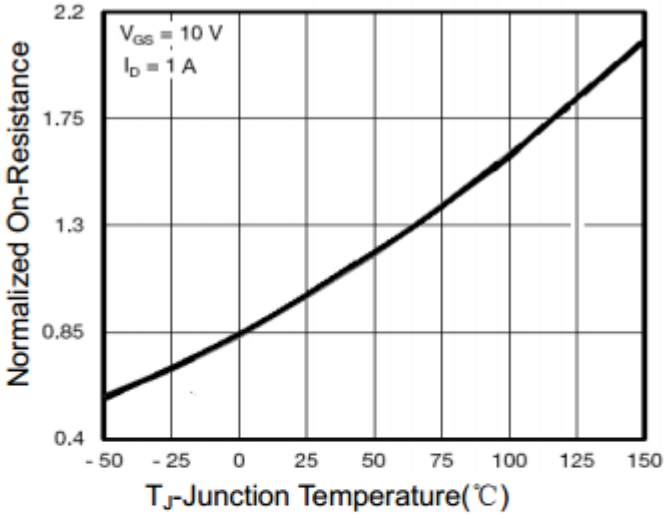


Figure 4 Rdson-JunctionTemperature

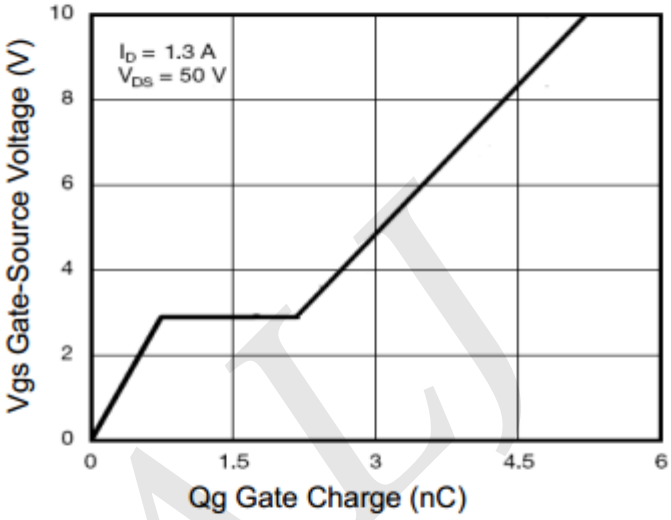


Figure 5 Gate Charge

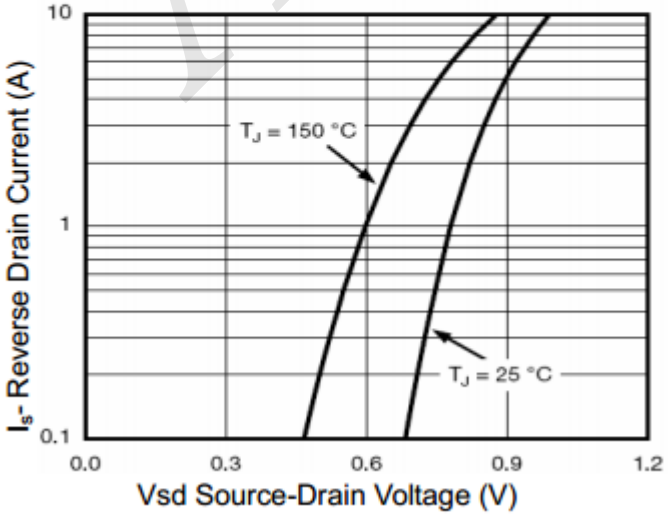


Figure 6 Source- Drain Diode Forward

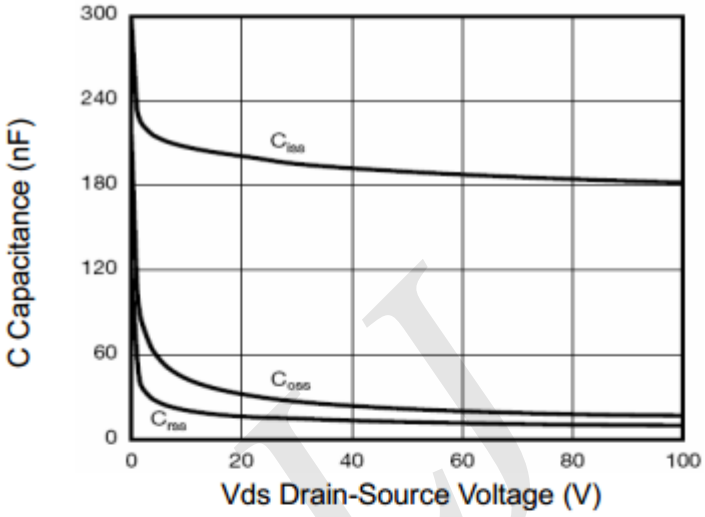


Figure 7 Capacitance vs Vds

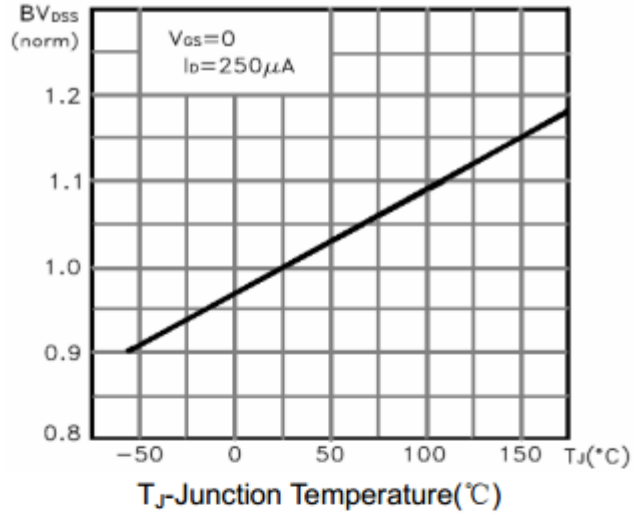


Figure 9 BV_{DSS} vs Junction Temperature

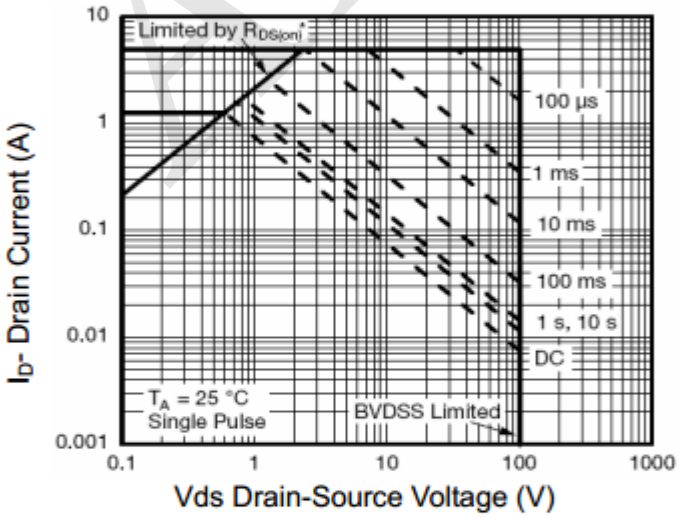


Figure 8 Safe Operation Area

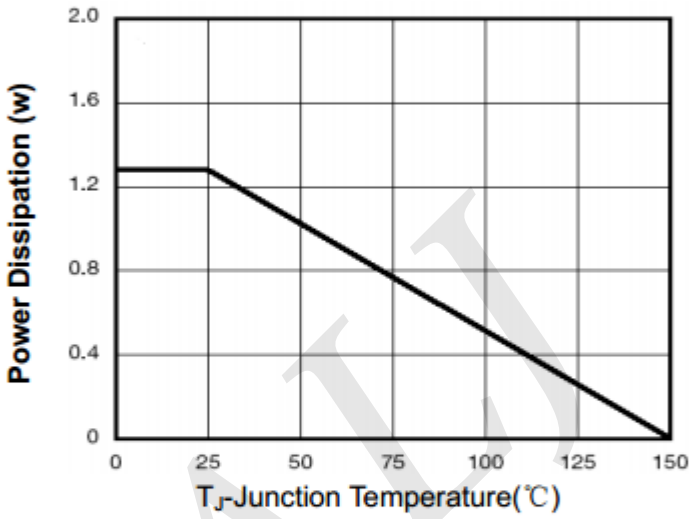


Figure 10 Power De-rating

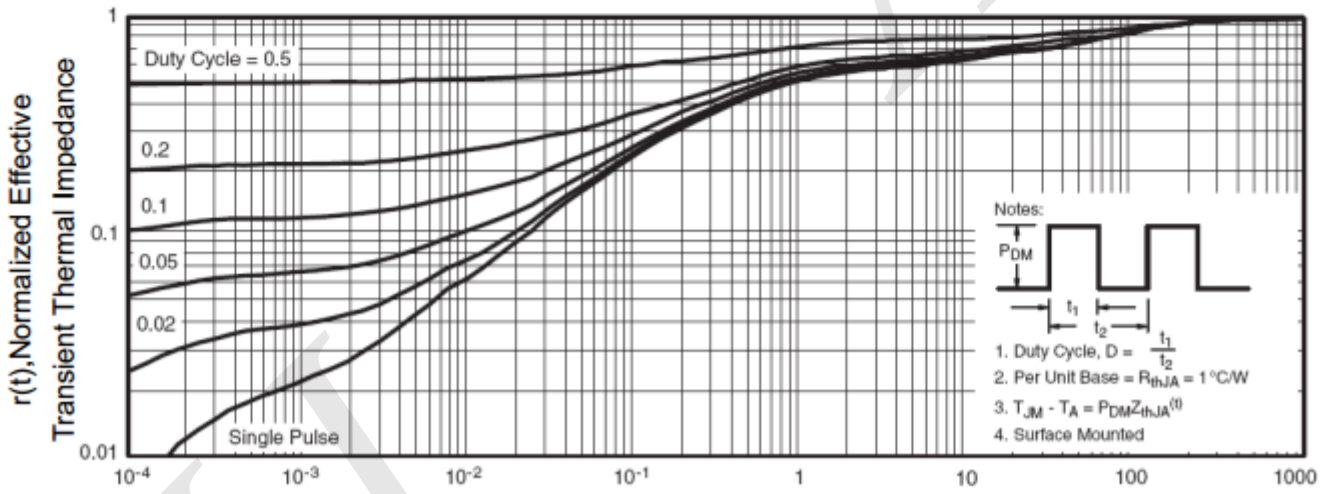


Figure 11 Normalized Maximum Transient Thermal Impedance