PRODUCT DATA SHEET

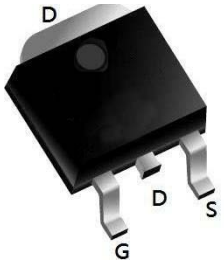
To learn more about JGSEMI, please visit our website at

Datasheet Resources Samples

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

SUD50P06-15L

P-Ch 60V Fast Switching MOSFETs



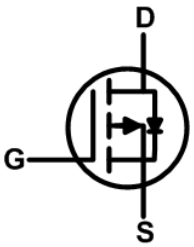
TO252-3L

Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions
- Synchronous-rectification applications



Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Symbol	Parameter		Value	Units
VDSS	Drain-to-Source Voltage		-60	V
ID	Continuous Drain Current	TC = 25 °C	-60	A
	Continuous Drain Current	TC = 100 °C	-35	A
IDMa1	Pulsed Drain Current		-220	A
VGS	Gate-to-Source Voltage		±20	V
PD	Power Dissipation		100	W
EAS a2	Single pulse avalanche energy		337	mJ
TJ, TSTG	Operating Junction and Storage Temperature Range		150, –55 to 150	℃
TL	Maximum Temperature for Soldering		260	℃

Thermal Characteristics

Symbol	Parameter	Value	Units
RθJC	Thermal Resistance, Junction-to-Case	1.25	℃/W
RθJA	Thermal Resistance, Junction-to-Ambient	60	℃/W

TJ= 25℃ unless otherwise specified)

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
VDSS	Drain to Source Breakdown Voltage	VGS=0V, ID=-250μA	-60	--	--	V
IDSS	Drain to Source Leakage Current	VDS = -60V, VGS= 0V	--	--	1	μA
IGSS(F)	Gate to Source Forward Leakage	VGS =-20V	--	--	100	nA
IGSS(R)	Gate to Source Reverse Leakage	VGS =+20V	--	--	-100	nA
VGS(TH)	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-1.3	-1.8	-2.3	V
RDS(ON)1	Drain-to-Source On-Resistance	VGS=-10V, ID=-20A	--	12	16	mΩ
RDS(ON)2	Drain-to-Source On-Resistance	VGS=-4.5V, ID=-10A	--	18	20	mΩ

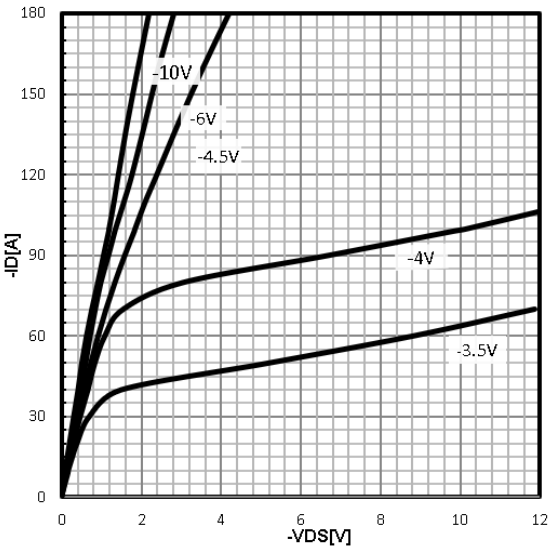
Dynamic Characteristics[5]						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
Ciss	Input Capacitance	VGS=0V VDS=-30V f=1.0MHz	--	2630	--	pF
Coss	Output Capacitance		--	484	--	
Crss	Reverse Transfer Capacitance		--	9.4	--	
Rg	Gate resistance	VGS=0V, VDS Open	--	12.5	--	Ω

Switching Characteristics[5]						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
td(ON)	Turn-on Delay Time	ID=-10A, RL=3.0Ω VDS= -30V VGS= -10V RG= 3Ω	--	20	--	ns
tr	Rise Time		--	25	--	
td(OFF)	Turn-Off Delay Time		--	60	--	
Nottef :	Fall Time		--	30	--	
Qg	Total Gate Charge	VGS=-10V VDS=-30V ID=-10A	--	38	--	nC
Qgs	Gate Source Charge		--	6.9	--	
Qgd	Gate Drain Charge		--	4.98	--	

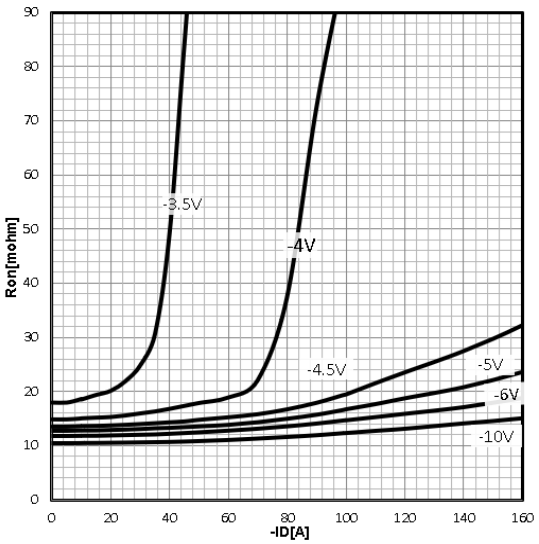
Drain- Source Body Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
IS	Diode Forward Current	TC=25 °C	--	--	-60	A
VSD	Diode Forward Voltage	IS=-5.0A, VGS=0V	--	--	-1.2	V
trr	Reverse Recovery time	IS=-10A, VDD=-30V dI/dt=100A/μs	--	50	--	ns
Qrr	Reverse Recovery Charge		--	80	--	nC

Characteristics Curve:

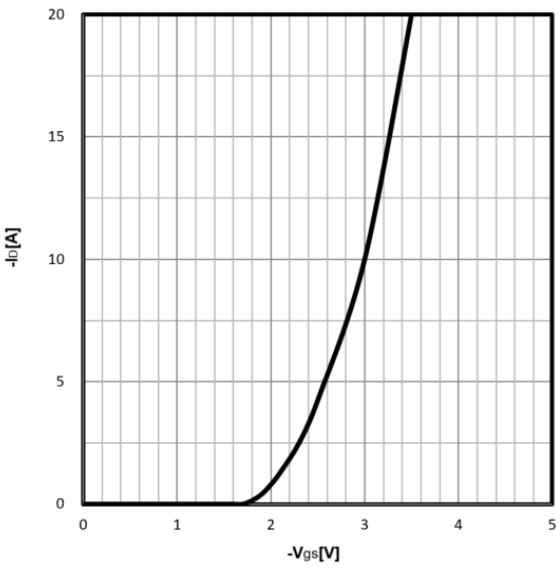
Typ. output characteristics
$-I_D=f(-V_{DS})$



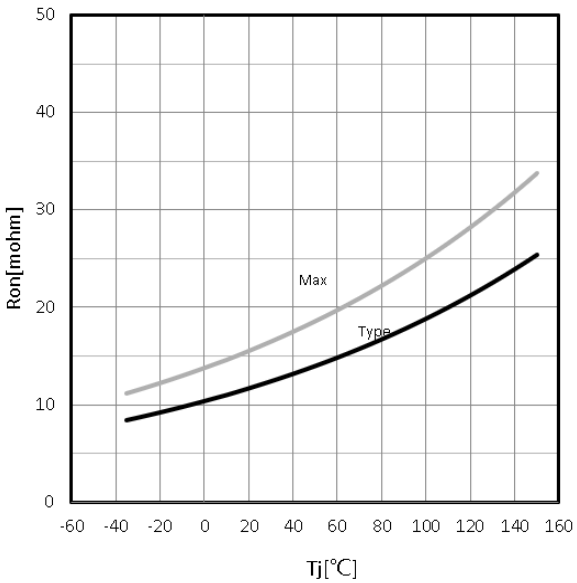
Typ. drain-source on resistance
$R_{DS(on)}=f(-I_D)$



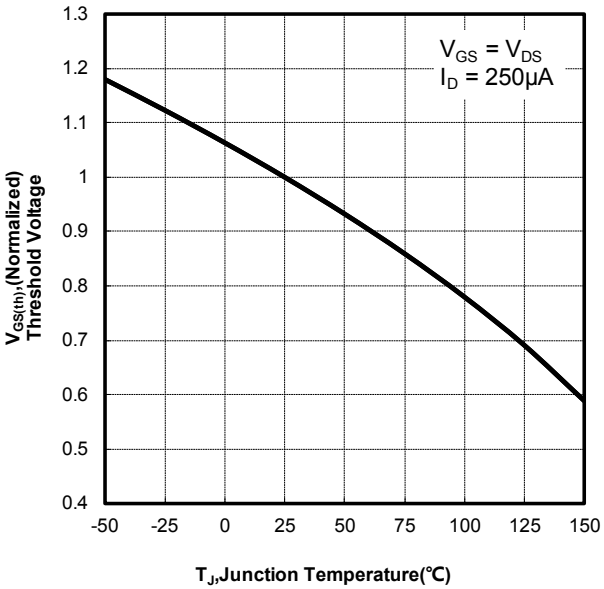
Typ. transfer characteristics
$-I_D=f(-V_{GS})$



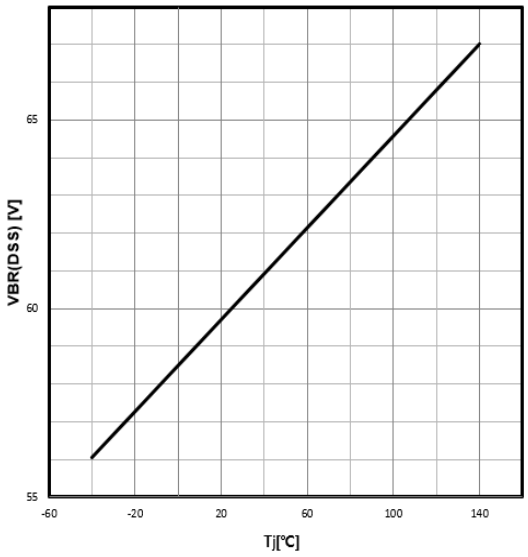
Drain-source on-state resistance
$R_{DS(on)}= f(T_j)$; I_D=-20A; V_{GS}=-10V



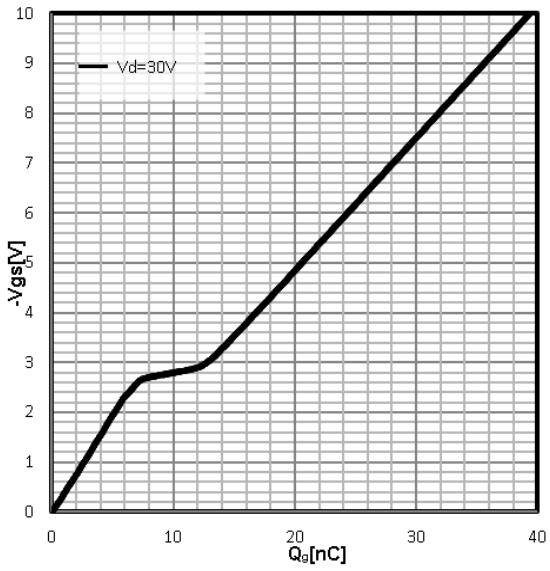
Gate Threshold Voltage
$-V_{TH}=f(T_j)$; I_D=-250uA



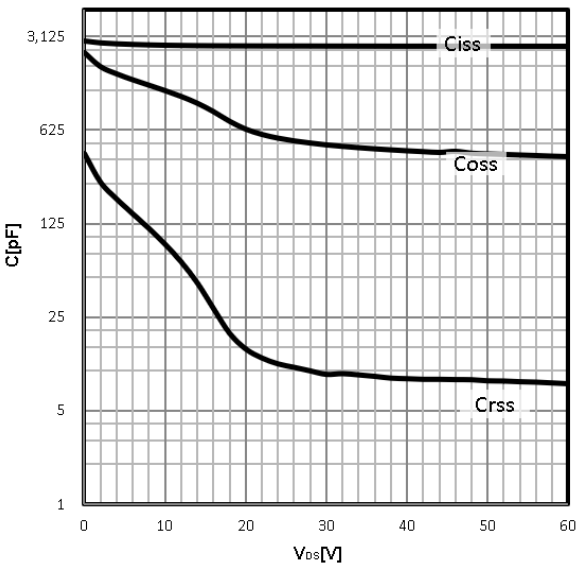
Drain-source breakdown voltage
$-V_{BR(DSS)}=f(T_j)$; I_D=-250uA



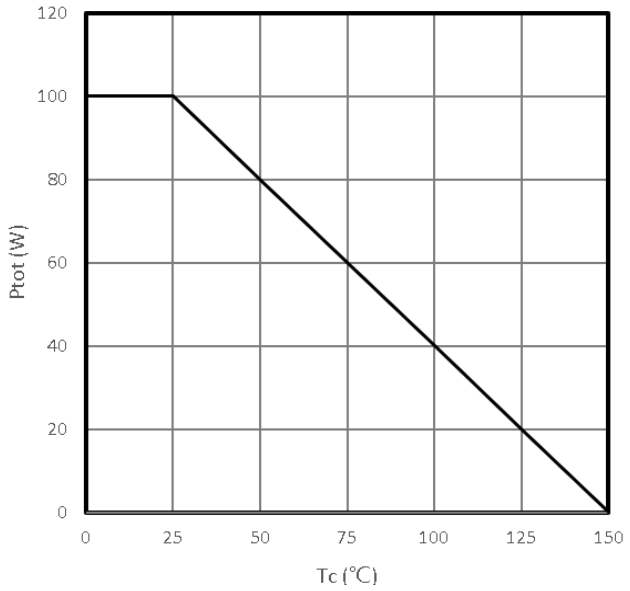
Typ. gate charge
$V_{GS}=f(Q_{gate})$; I_D=-10A



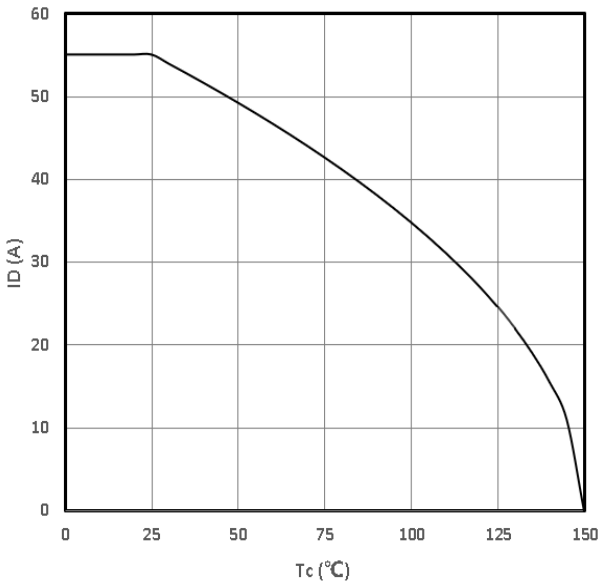
Typ. Capacitances
C =f(-V_{DS}); V_{GS}=0V; f =1MHz



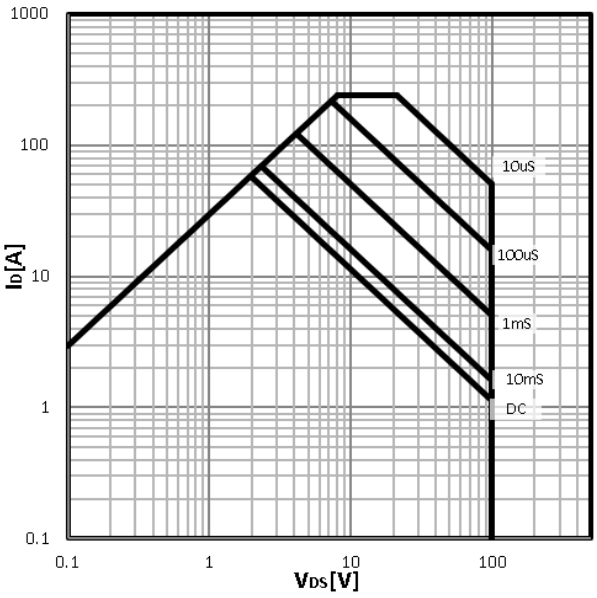
Power Dissipation
$P_{tot}=f(T_C)$



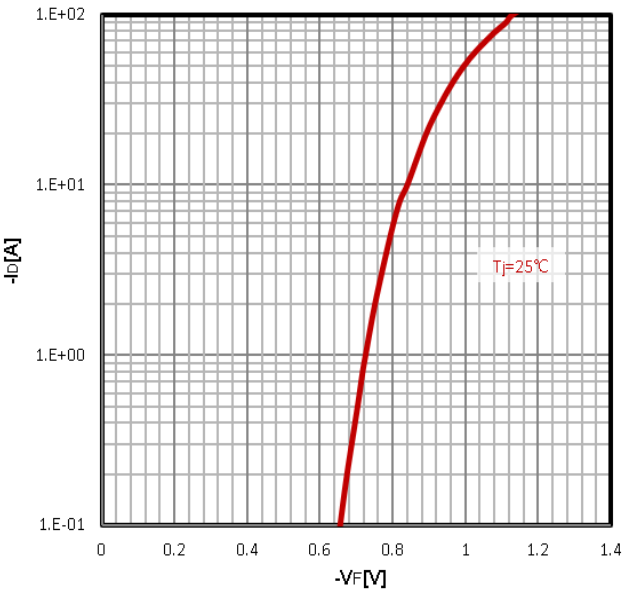
Maximum Drain Current
$-I_D=f(T_C)$



Safe operating area
$-I_D=f(-V_{DS})$

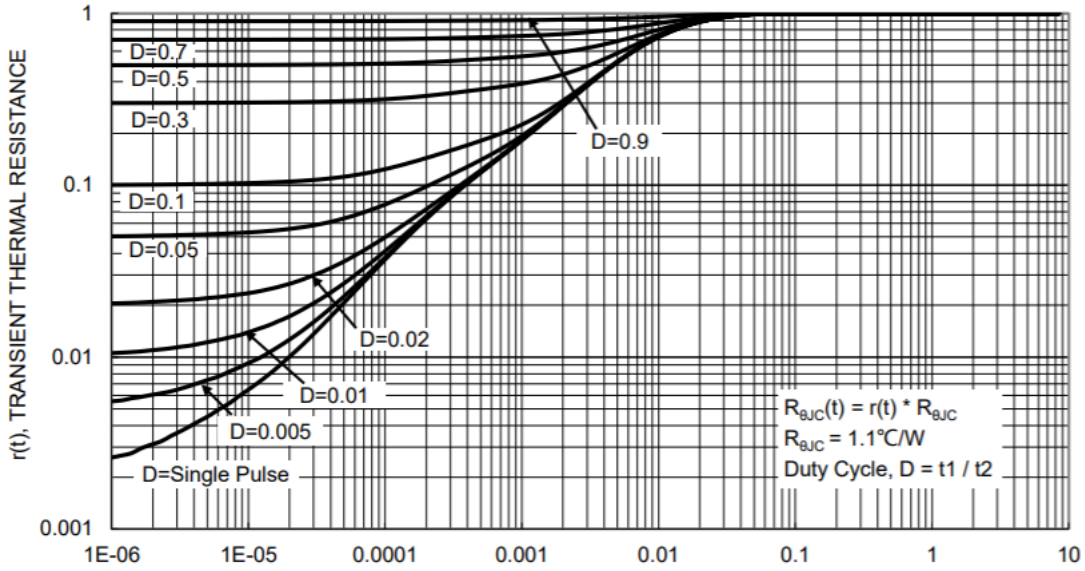


Body Diode Forward Voltage Variation
$-I_F=f(-V_{DS})$



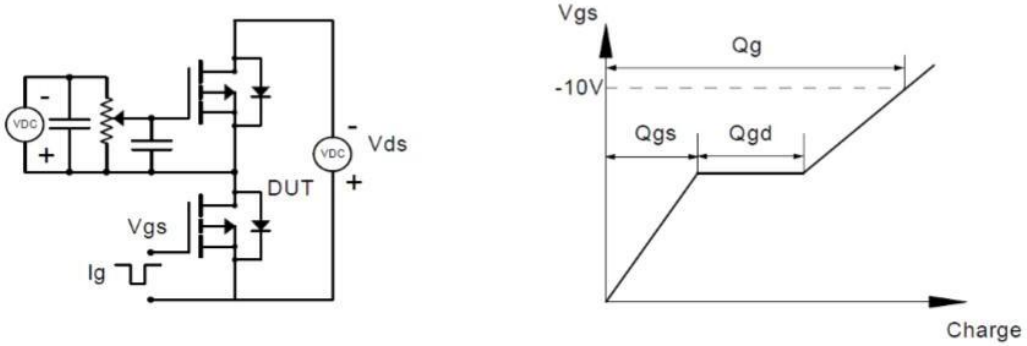
Max. transient thermal impedance

$Z_{thJC}=f(t_p)$

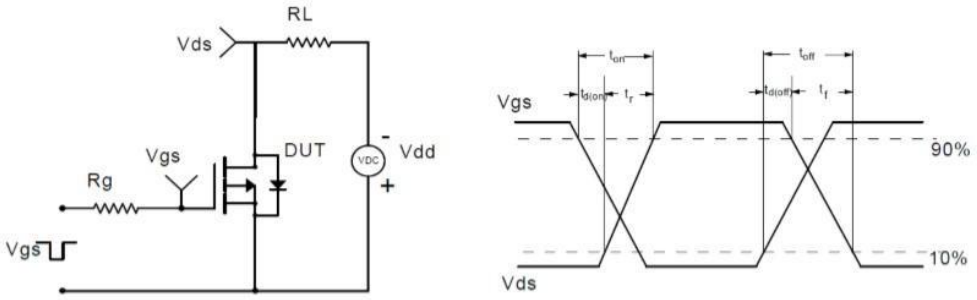


Test Circuit and Waveform:

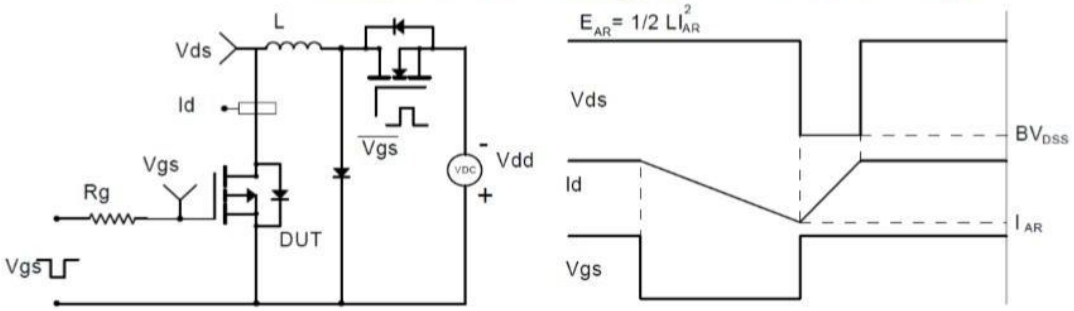
Gate Charge Test Circuit & Waveform



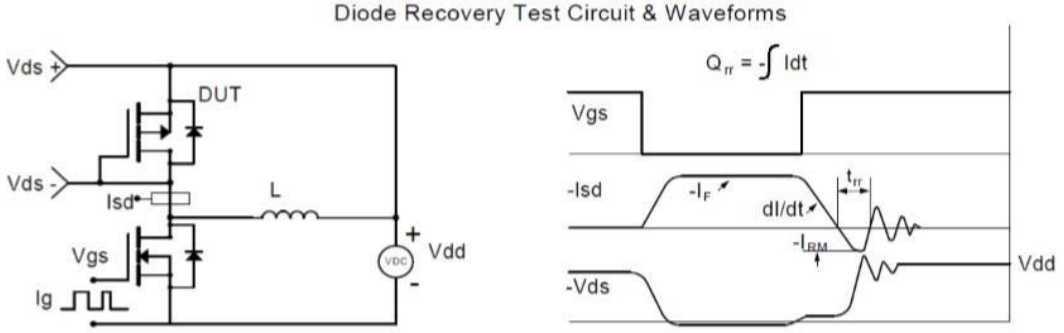
Resistive Switching Test Circuit & Waveforms



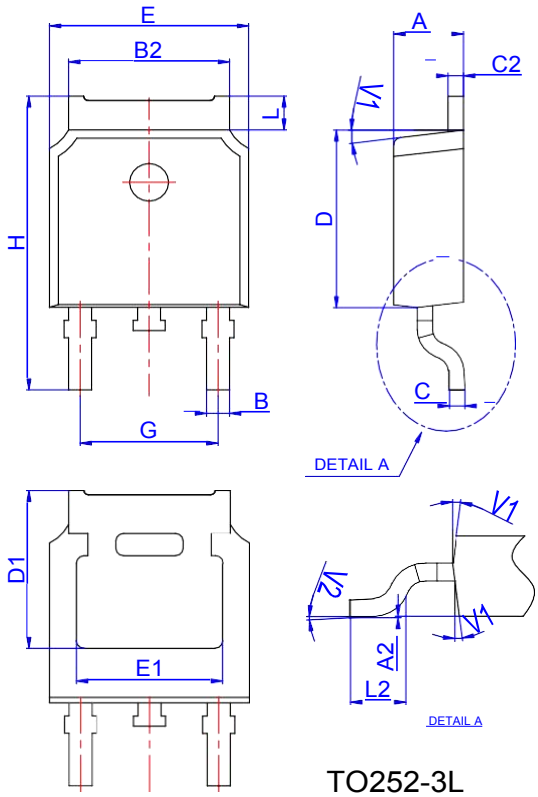
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data TO252-3L



TO252-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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1, Any and all JGSEMI products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, orother applic ations whose failure can be reasonably expected to result in serious physical or material damage. Consult with your JGSEMI representative nearest you before using any JGSEMI products described or contained herein in such applicati ons.

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