Features

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

Product Summary

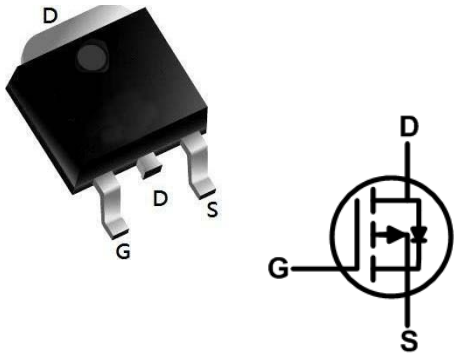
Green

BVDSS	RDSON	ID
-100V	115mΩ	-15A

Applications

- Battery switching application
- Hard switched and high frequency circuits
- Power management

TO252-3L Pin Configuration



Absolute Maximum Ratings:

Symbol	Parameter		Value	Units
V_{DSS}	Drain-to-Source Voltage		-100	V
I_D	Continuous Drain Current	T_C = 25 °C	-15	A
	Continuous Drain Current	T_C = 100 °C	-9.2	A
I_{DM}[a1]	Pulsed Drain Current		-58	A
V_{GS}	Gate-to-Source Voltage		±20	V
P_D	Power Dissipation		69	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range		150, –55 to 150	℃
T_L	Maximum Temperature for Soldering		260	℃

Thermal Characteristics:

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.8	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	75	℃/W

Electrical Characteristics (TA= 25℃ unless otherwise specified):

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-100	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=-100V, V_{GS}=0V	--	--	1	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=-20V, V_{DS}=0V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=+20V, V_{DS}=0V	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-1.2	-1.7	-2.2	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	V_{GS}=-10V, I_D=-5A	--	115	150	mΩ
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	V_{GS}=-4.5V, I_D=-5A	--	130	165	mΩ

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = -50V f = 1.0MHz	--	700	--	pF
C_{oss}	Output Capacitance		--	56	--	
C_{rss}	Reverse Transfer Capacitance		--	8.6	--	

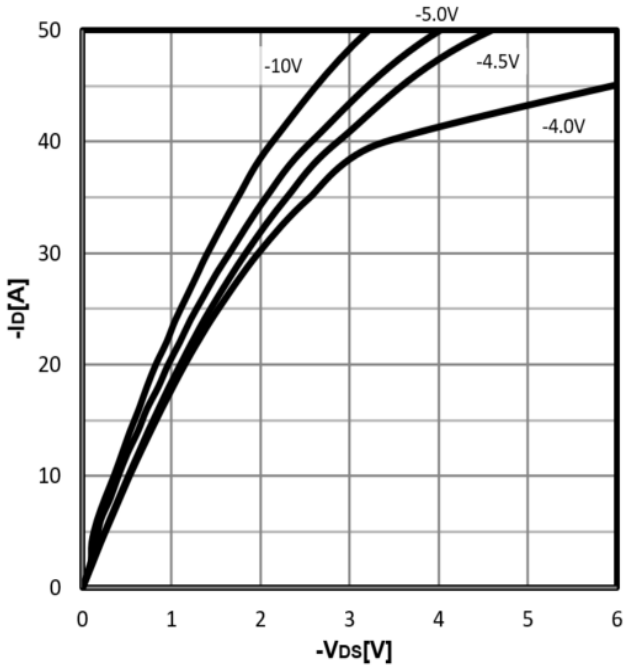
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =-5A V_{DS} = -50V V_{GS} = -10V R_G = 5Ω	--	5.9	--	ns
tr	Rise Time		--	3.7	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	39.5	--	
t_f	Fall Time		--	24.6	--	
Q_g	Total Gate Charge	V_{GS} =-10V V_{DS} = -50V I_D =-5A	--	12.7	--	nC
Q_{gs}	Gate Source Charge		--	2.1	--	
Q_{gd}	Gate Drain Charge		--	2.3	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{SD}	Diode Forward Voltage	I_S=-5A, V_{GS}=0V	--	--	-1.2	V
t_{rr}	Reverse Recovery time	I_S=-5A, V_{DD}=-50V dI/dt=100A/μs	--	66	--	ns
Q_{rr}	Reverse Recovery Charge		--	214	--	nC

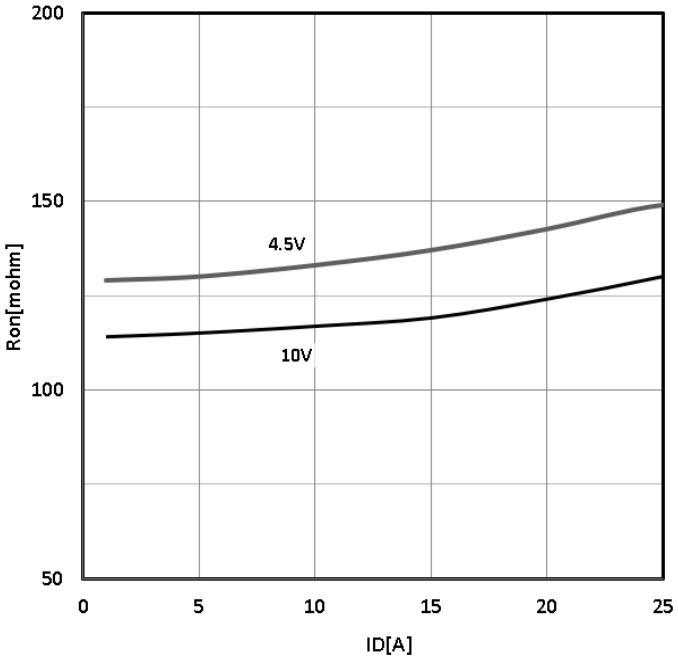
[a1]: Repetitive rating; pulse width limited by maximum junction temperature

Characteristics Curve:

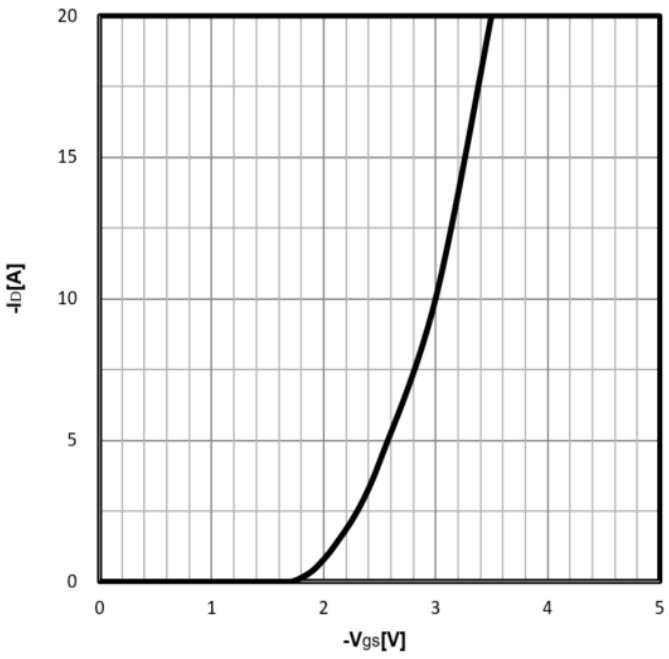
Typ. output characteristics
$-I_D=f(-V_{DS})$



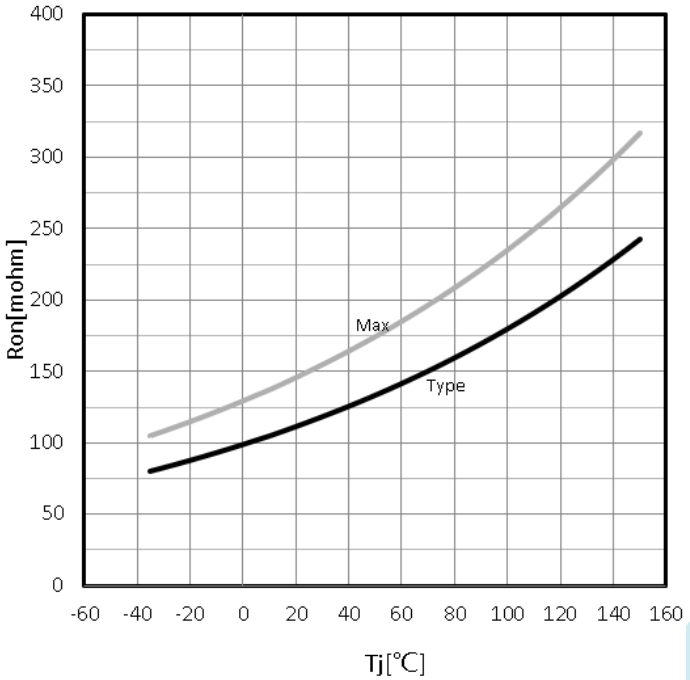
Typ. drain-source on resistance
$R_{DS(on)}=f(-I_D)$



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

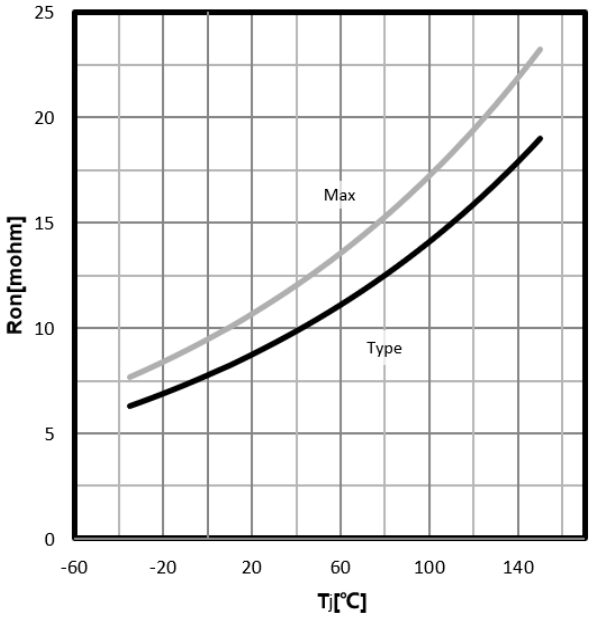


Drain-source on-state resistance
$R_{DS(on)}= f(T_j)$; I_D=-5A; V_{GS}=-10V



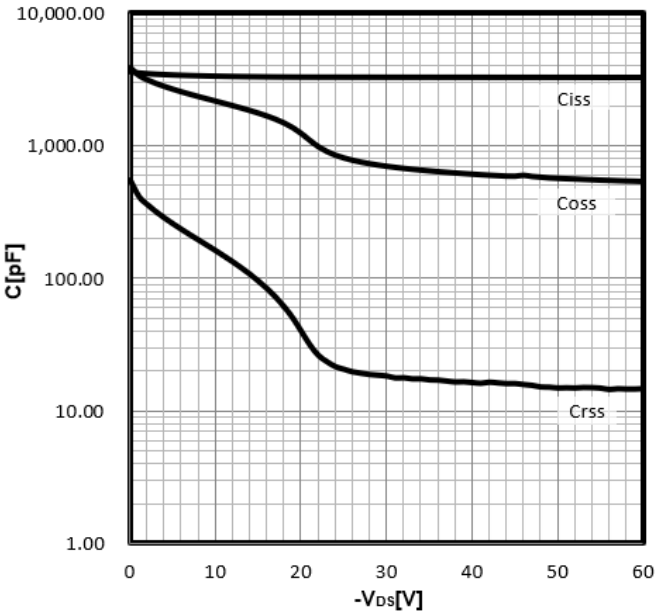
Drain-source on-state resistance

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



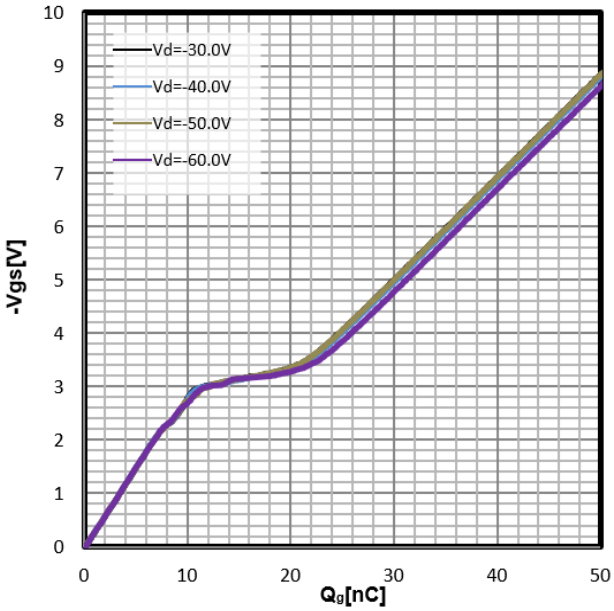
Typ. capacitances

C =f(V_{DS}); V_{GS}=0V; f =1MHz



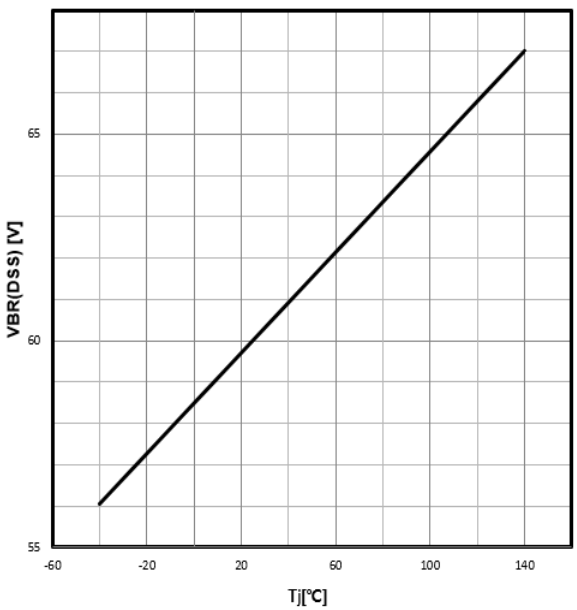
Typ. gate charge

$V_{GS}=f(Q_{gate})$; I_D=-20A

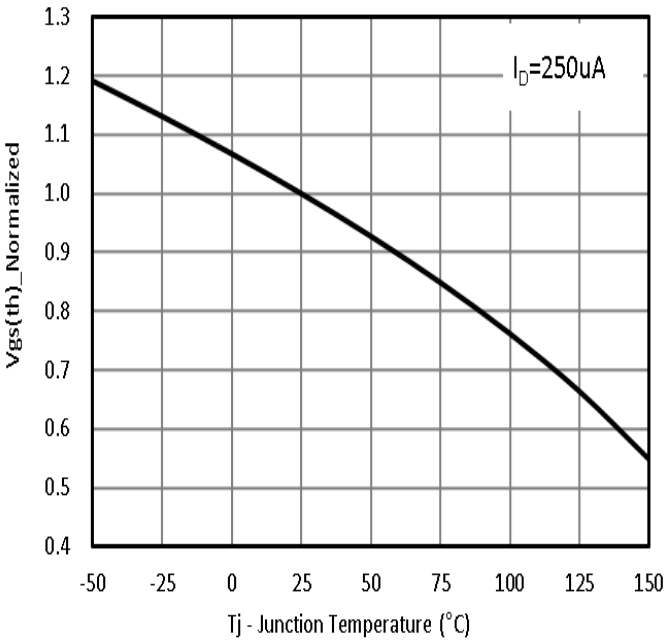


Drain-source breakdown voltage

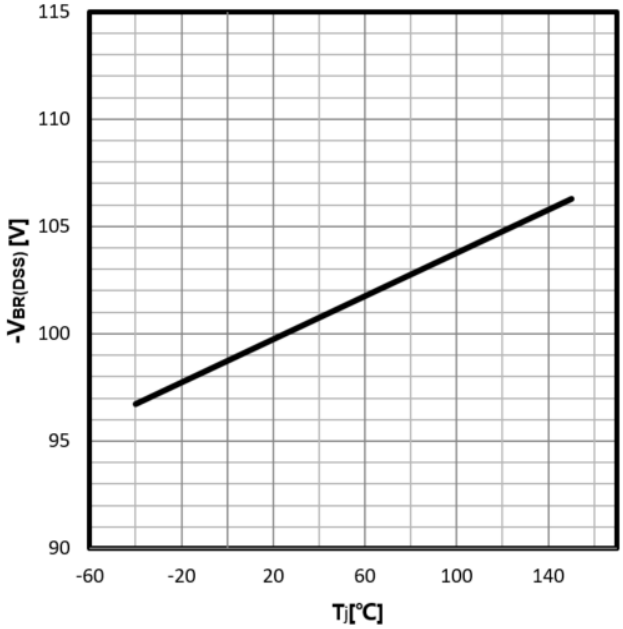
$V_{BR(DSS)}=f(T_j)$; I_D=-250uA



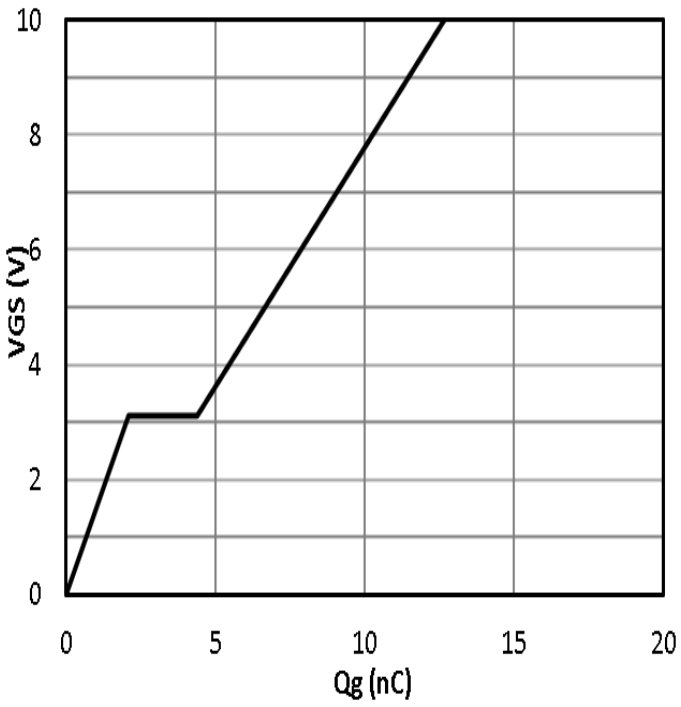
Gate Threshold Voltage
$-V_{TH}=f(T_j)$; I_D=-250uA



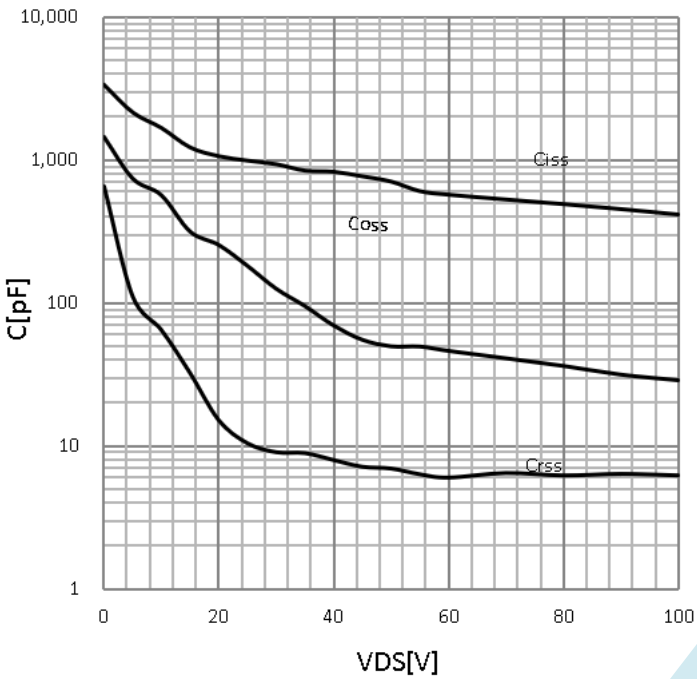
Drain-source breakdown voltage
$-V_{BR(DSS)}=f(T_j)$; I_D=-250uA



Typ. gate charge
$-V_{GS}=f(Q_g)$; I_D=-5A

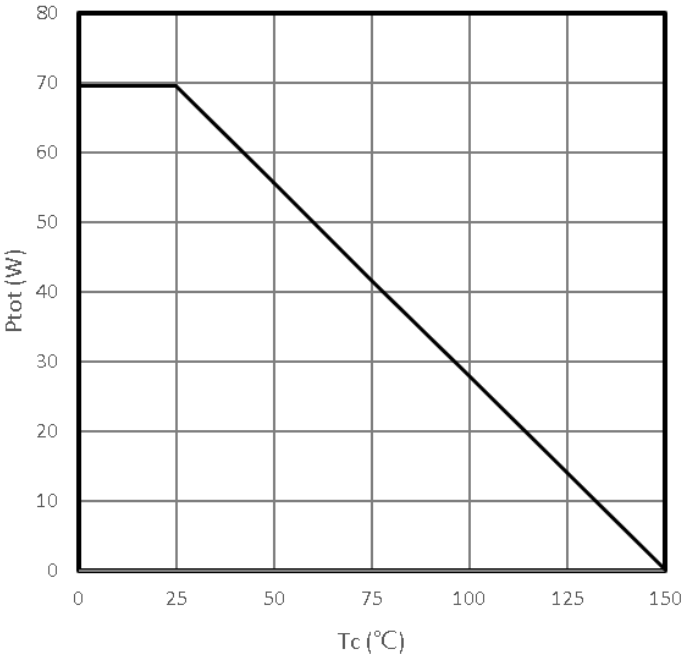


Typ. capacitances
$C=f(-V_{DS})$; V_{GS}=0V; f=1MHz



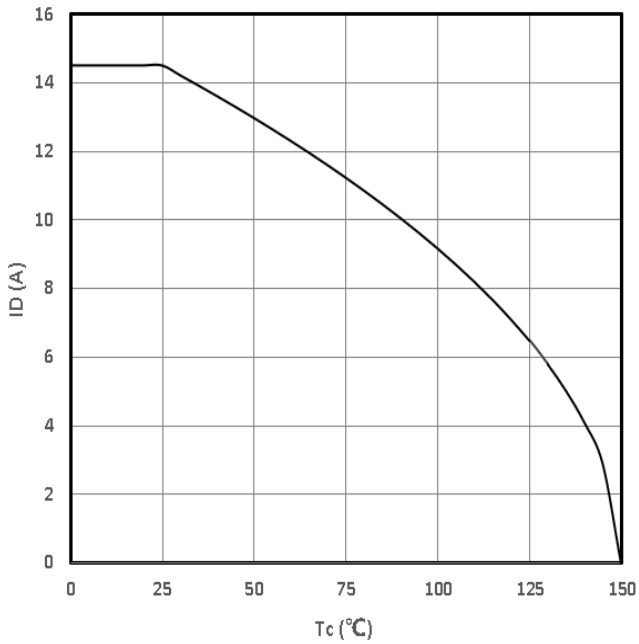
Power Dissipation

$P_{tot}=f(T_C)$



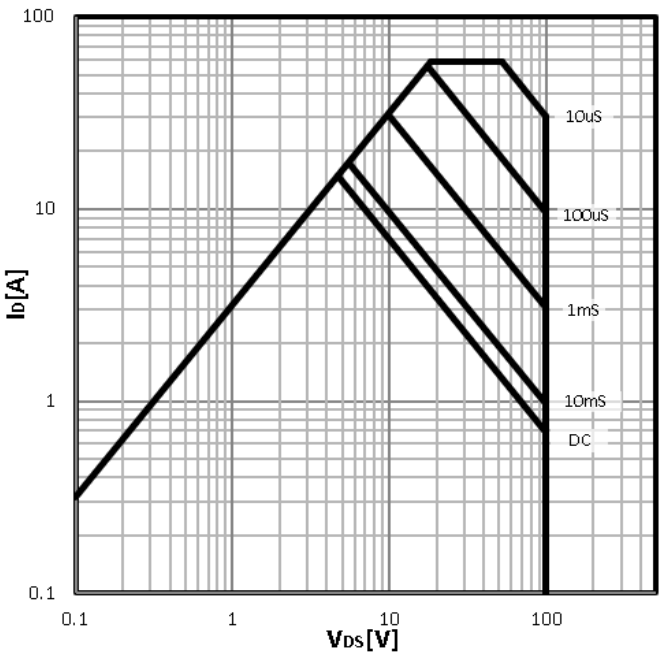
Maximum Drain Current

$-I_D=f(T_C)$



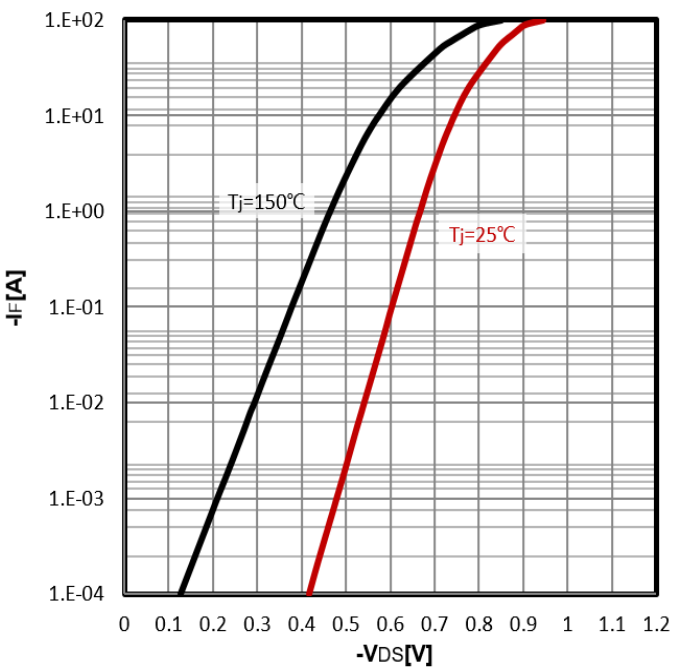
Safe operating area

$-I_D=f(-V_{DS})$



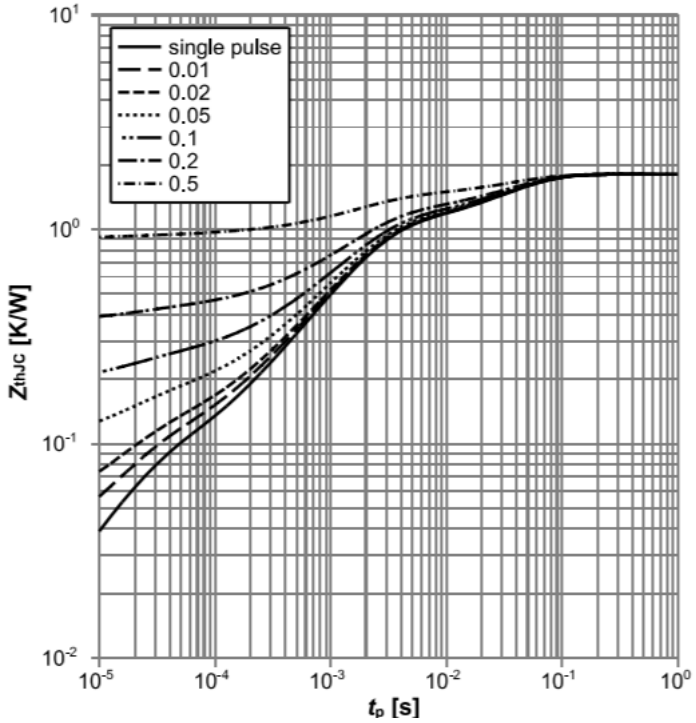
Body Diode Forward Voltage Variation

$-I_F=f(-V_{DS})$



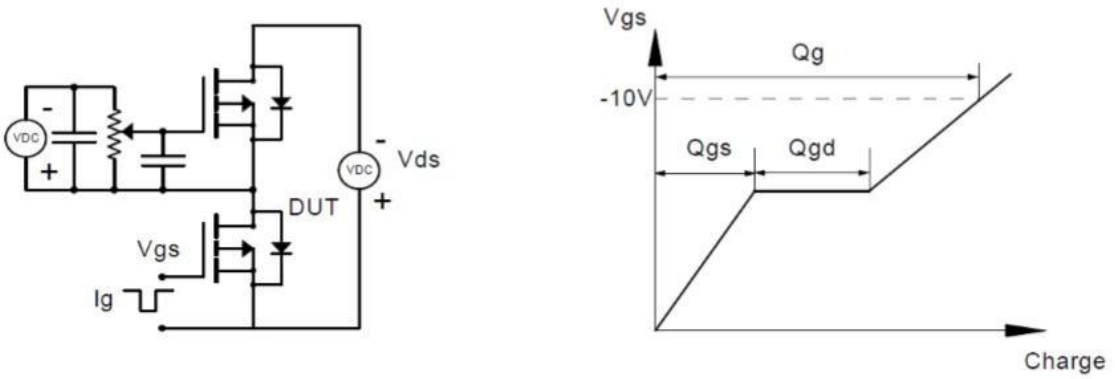
Max. transient thermal impedance

$Z_{thJC}=f(t_p)$

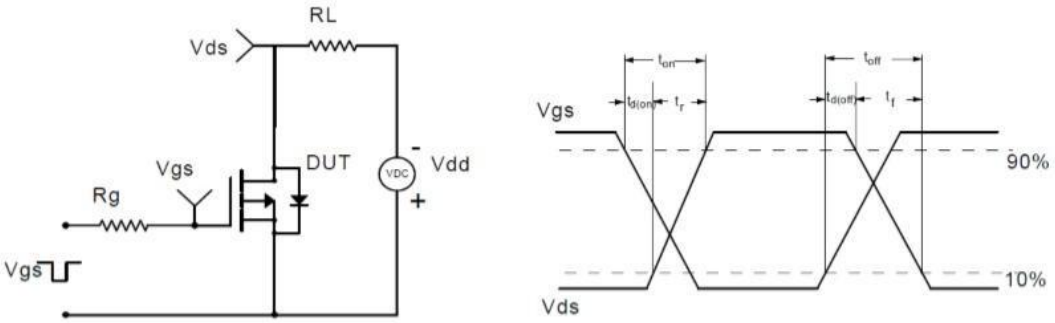


Test Circuit and Waveform:

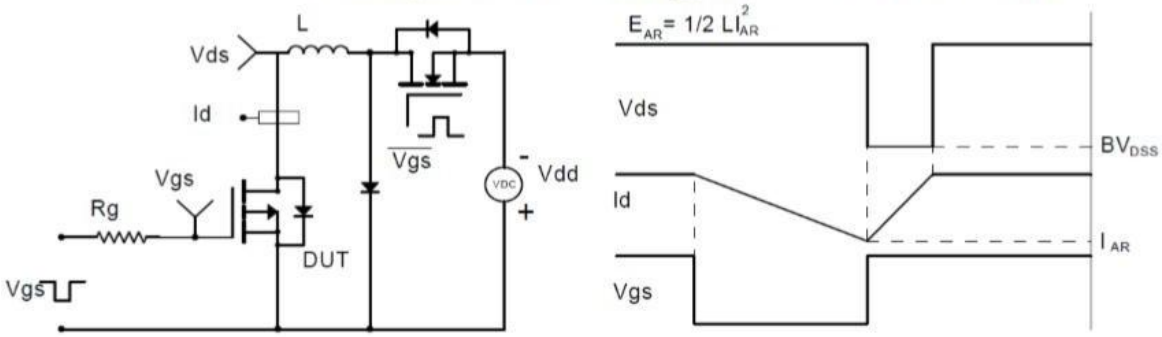
Gate Charge Test Circuit & Waveform



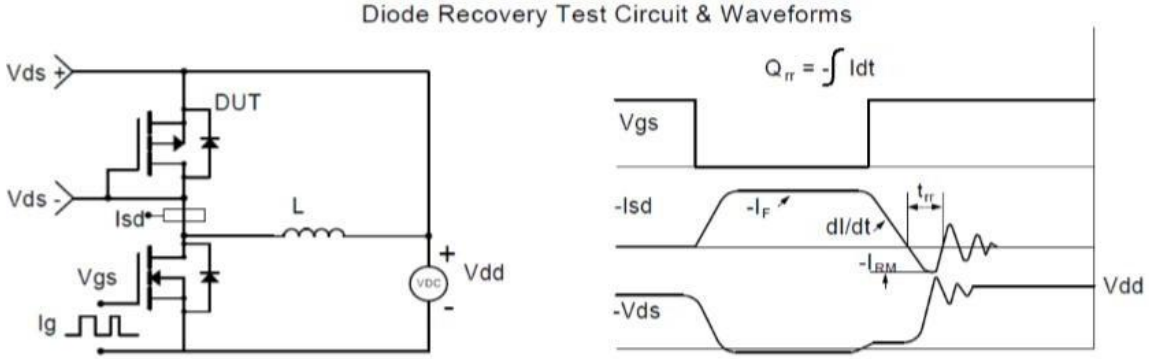
Resistive Switching Test Circuit & Waveforms



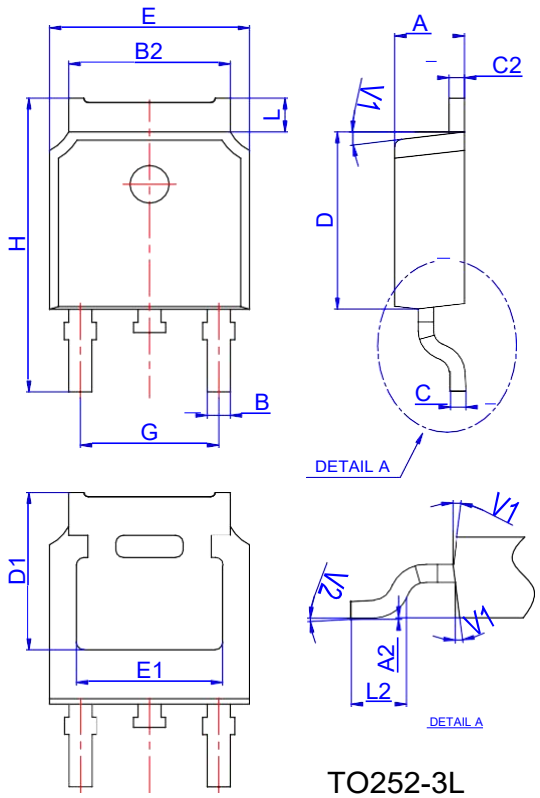
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



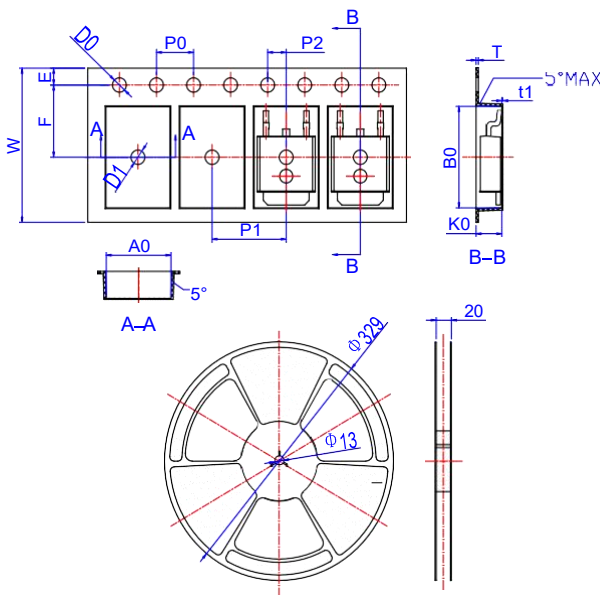
Package Mechanical Data TO252-3L



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°

Reel Specification-TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583