

Features

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

Applications

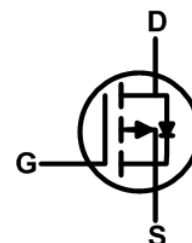
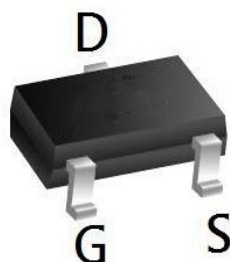
- Battery switching application
- Hard switched and high frequency circuits
- Power management

Product Summary



BVDSS	RDSON	ID
-100V	800mΩ	-1A

SOT23 Pin Configuration



Absolute Maximum Ratings:

Symbol	Paramete		Value	Units
V_{DSS}	Drain-to-Source Voltage		-100	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	-0.1	A
	Continuous Drain Current	$T_C=100^\circ\text{C}$	-0.45	A
I_{DM}^{a1}	Pulsed Drain Current		-2.8	A
V_{GS}	Gate-to-Source Voltage		± 20	V
P_D	Power Dissipation		1.0	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		150, -55 to 150	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering		260	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Paramete	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	125	$^\circ\text{C/W}$

Electrical Characteristic ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified):

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-100	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-100V, V_{GS}=0V$	--	--	1.0	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	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.5	-2.0	-2.5	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-0.5A$	--	800	900	m Ω
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	$V_{GS}=-4.5V, I_D=-0.3A$	--	900	1100	m Ω

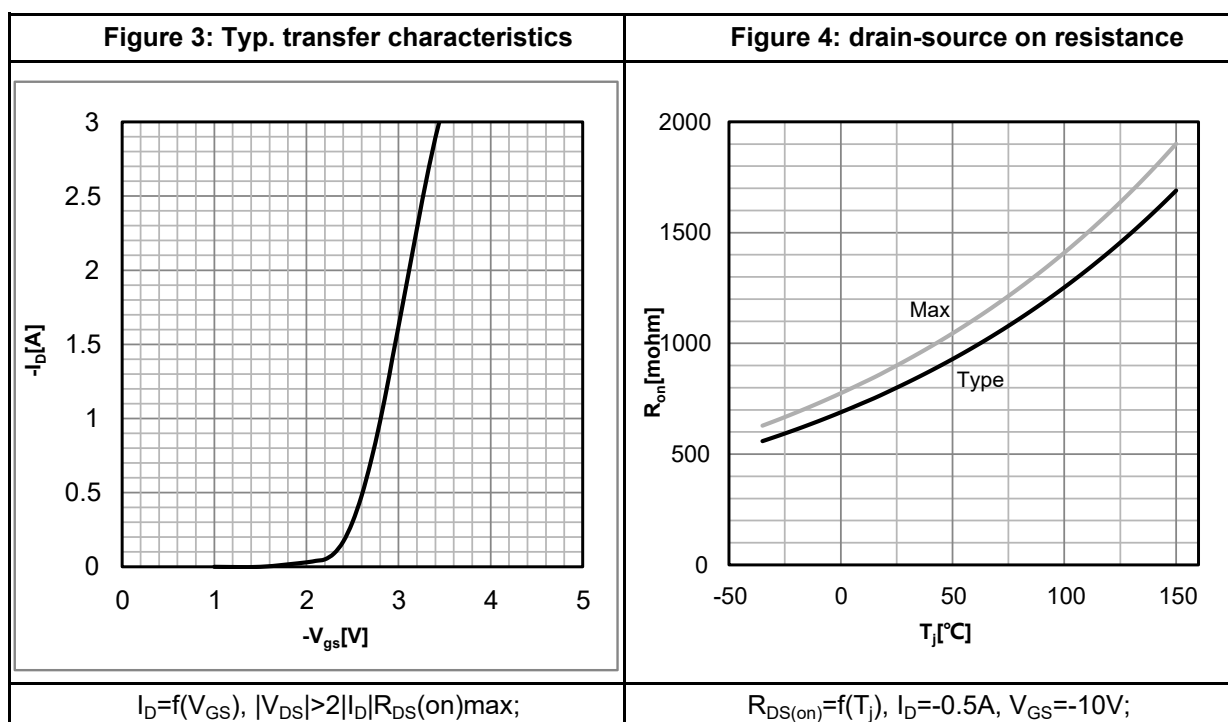
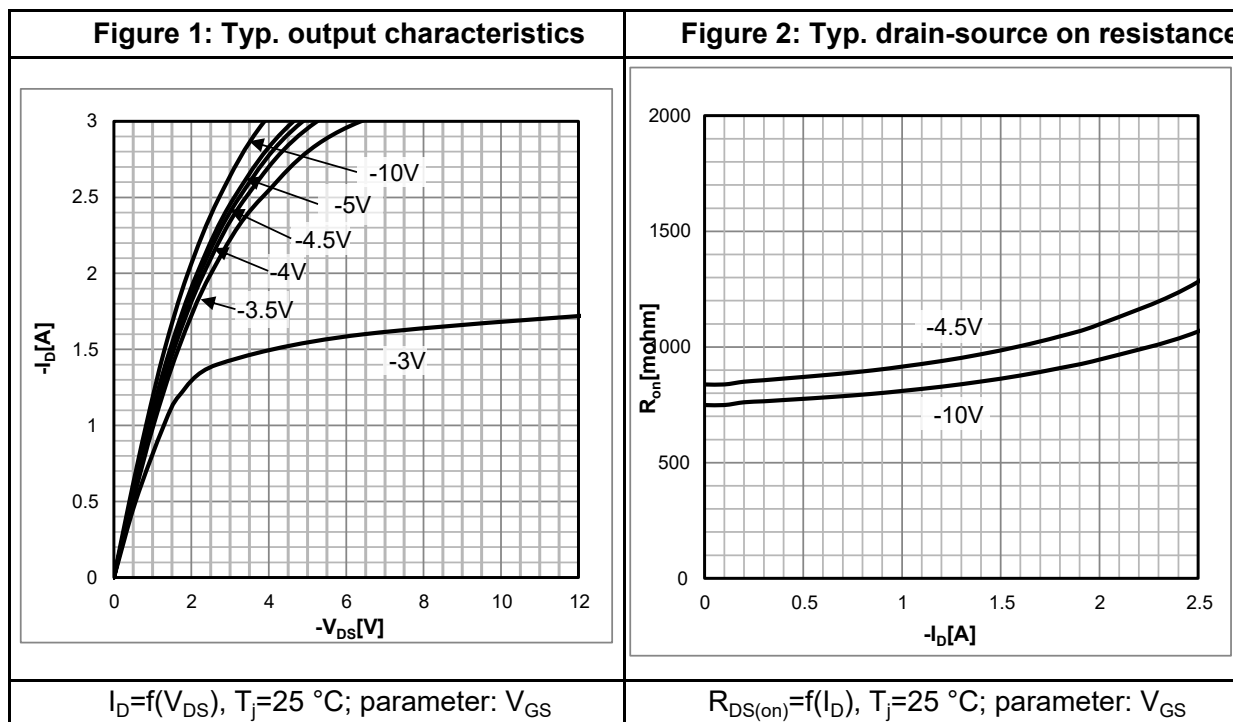
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	$V_{GS} = 0V$	--	141	--	pF
C_{oss}	Output Capacitance	$V_{DS} = -50V$	--	9.53	--	
C_{rss}	Reverse Transfer Capacitance	$f = 1.0MHz$	--	1.5	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_d(ON)$	Turn-on Delay Time	$I_D = -0.5A$ $V_{DS} = -50V$ $V_{GS} = -10V$ $R_G = 5.0\Omega$	--	13	--	ns
t_r	Rise Time		--	7	--	
$t_d(OFF)$	Turn-Off Delay Time		--	32	--	
t_f	Fall Time		--	3	--	
Q_g	Total Gate Charge	$V_{GS} = -10V$ $V_{DS} = -50V$ $I_D = -2A$	--	4.35	--	nC
Q_{gs}	Gate Source Charge		--	0.51	--	
Q_{gd}	Gate Drain Charge		--	0.74	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
I_S	Diode Forward Current	$T_C = 25\text{ }^{\circ}\text{C}$	--	--	-1	A
V_{SD}	Diode Forward Voltage	$I_S = -0.5A, V_{GS} = 0V$	--	--	-1.2	V

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

Characteristics Curve:



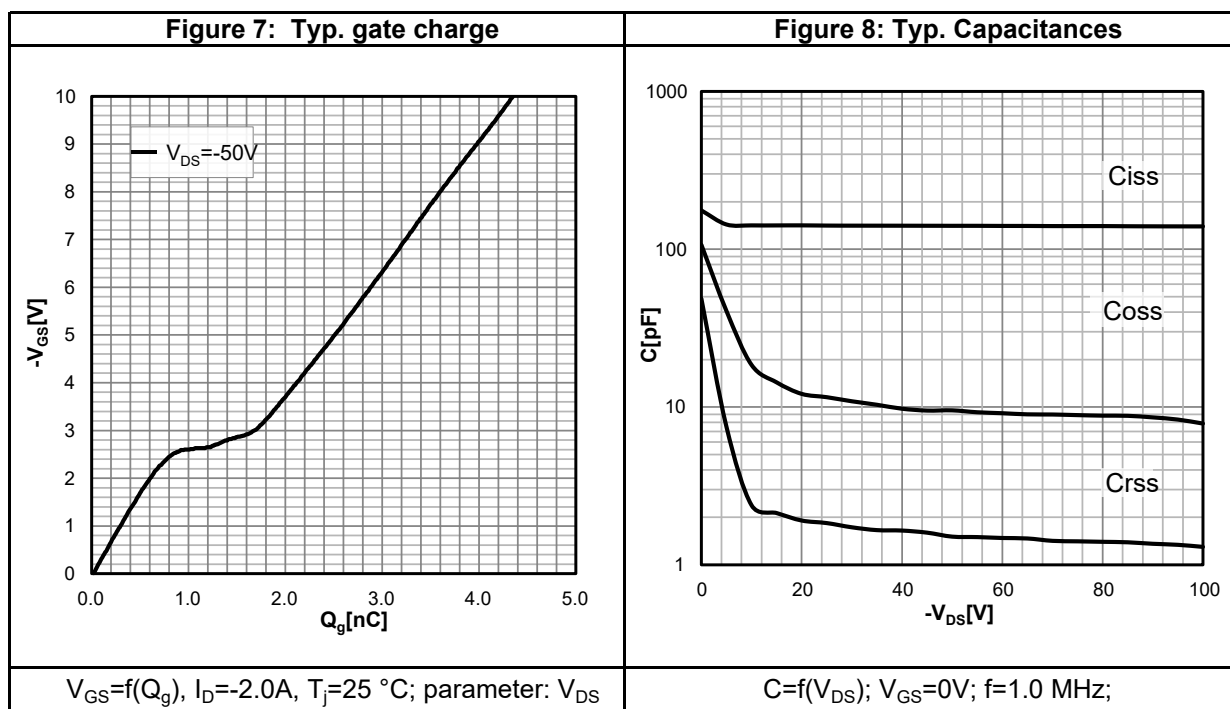
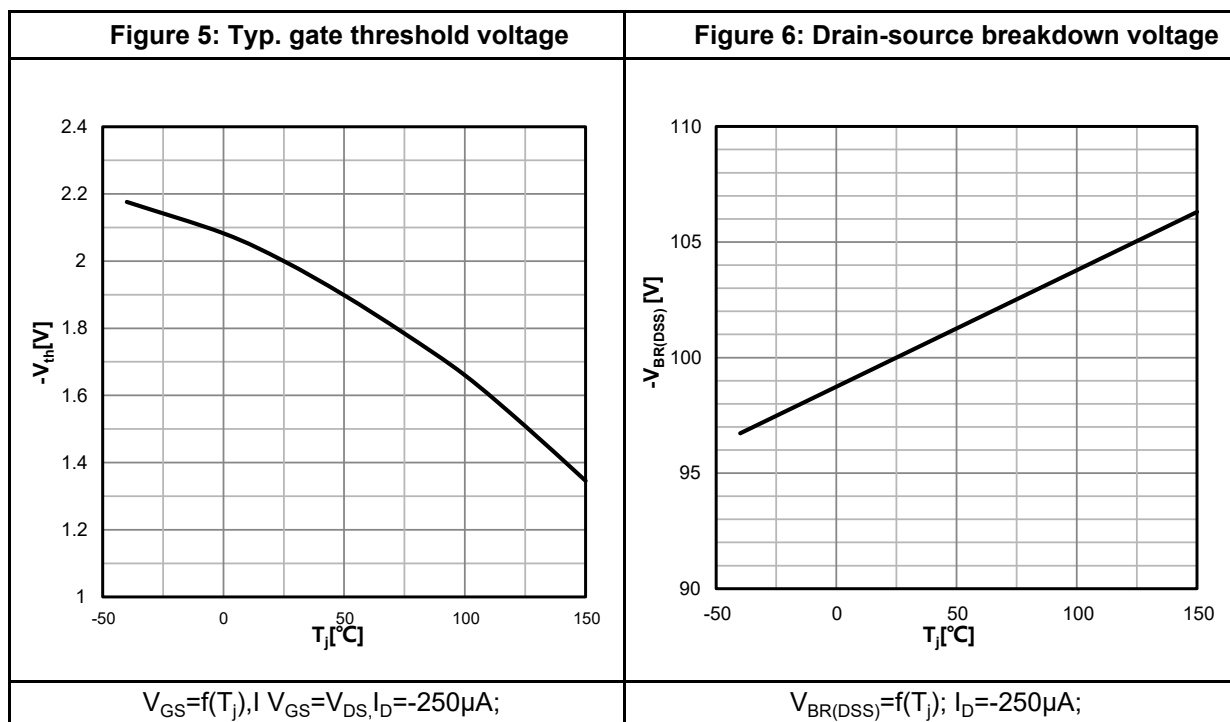
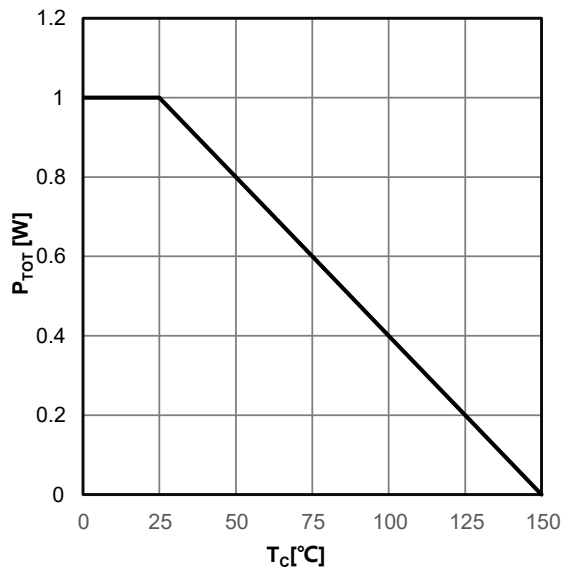
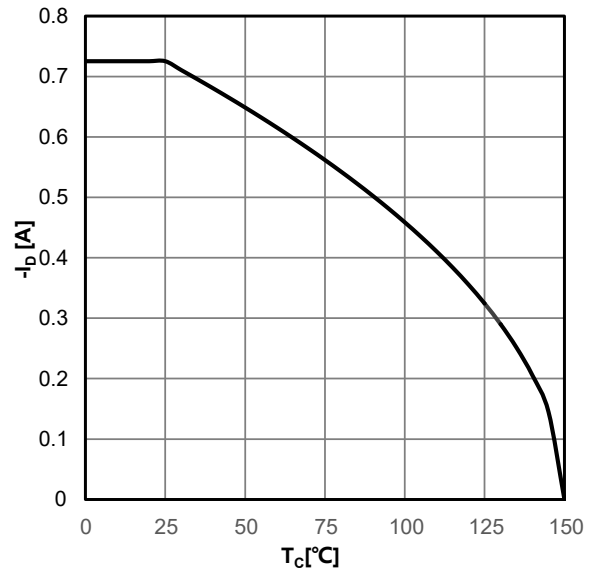


Figure 9: Power dissipation



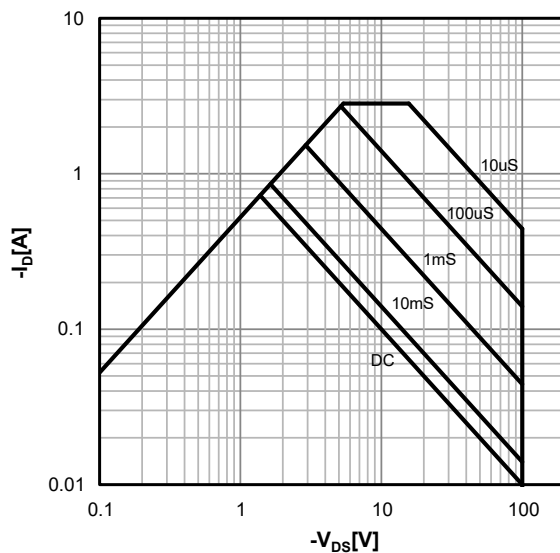
$$P_{\text{tot}}=f(T_C);$$

Figure 10: Drain current



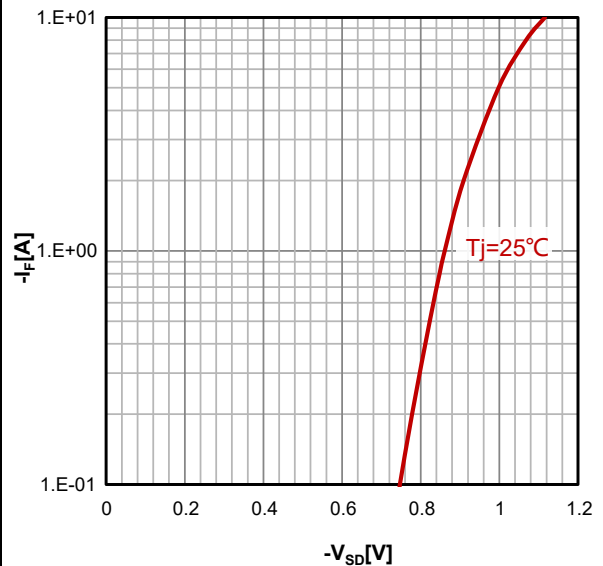
$$I_D=f(T_C);$$

Figure 11: Safe operating area



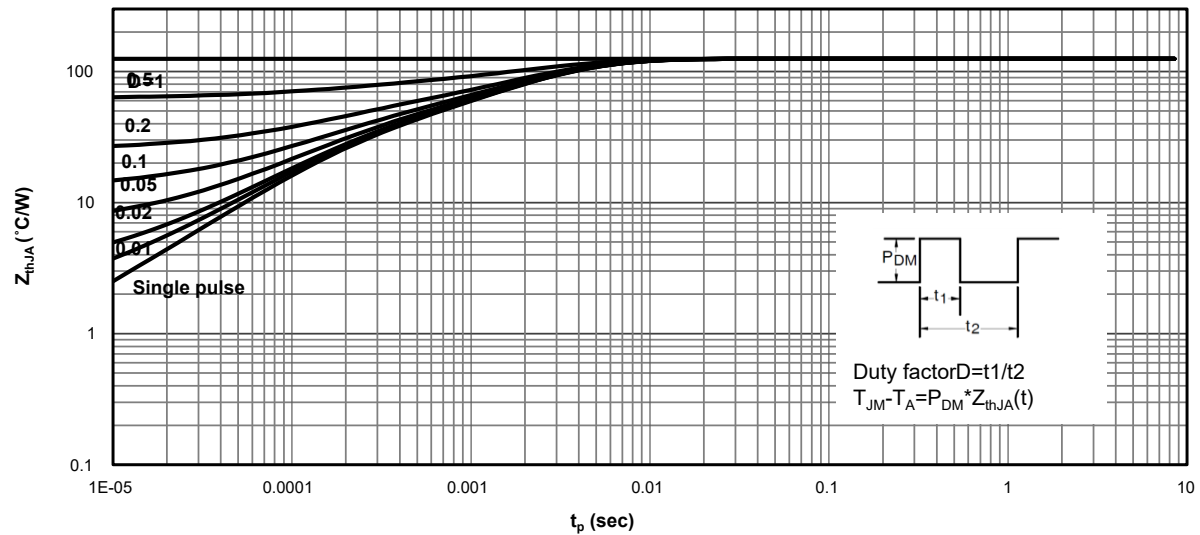
$$I_D=f(V_{\text{DS}}); T_C=25^{\circ}\text{C}; D=0; \text{parameter: } t_p$$

Figure 12: Typ. forward characteristics



$$I_F=f(V_{\text{SD}});$$

Figure 13: Max. Transient Thermal Impedance



$$Z_{thJA} = f(t_p); \text{ parameter: } D$$

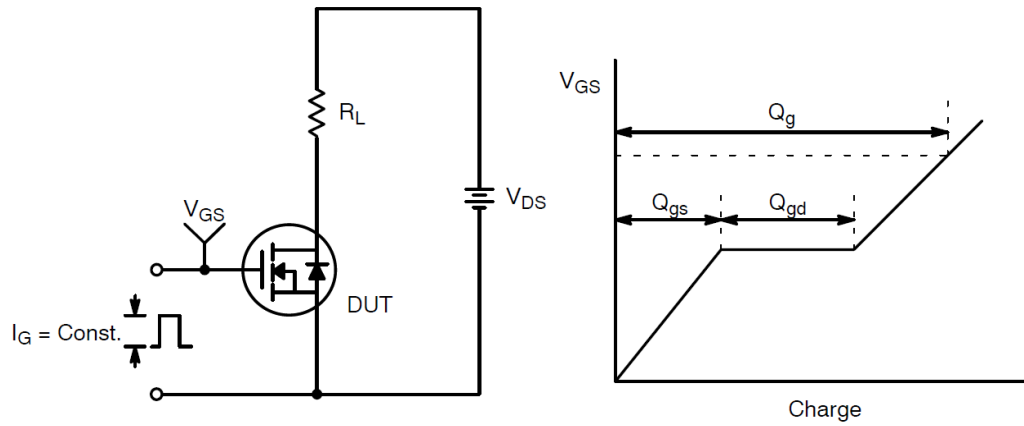


Figure 14: Gate Charge Test Circuit & Waveform

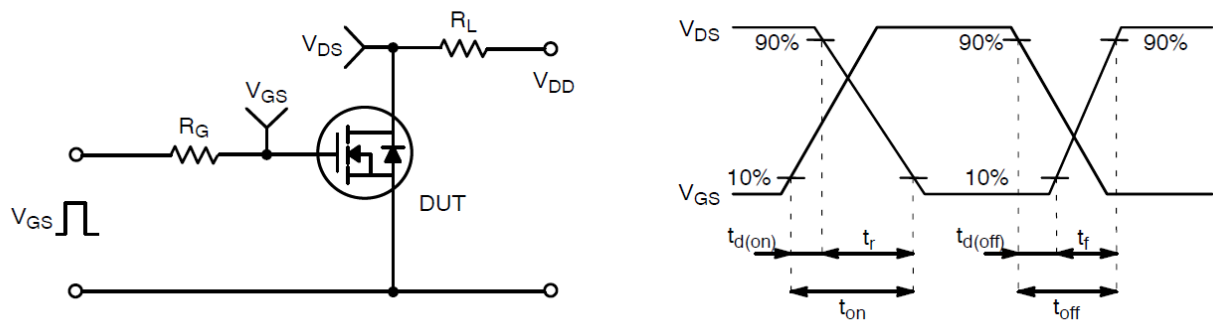


Figure 15: Resistive Switching Test Circuit & Waveforms

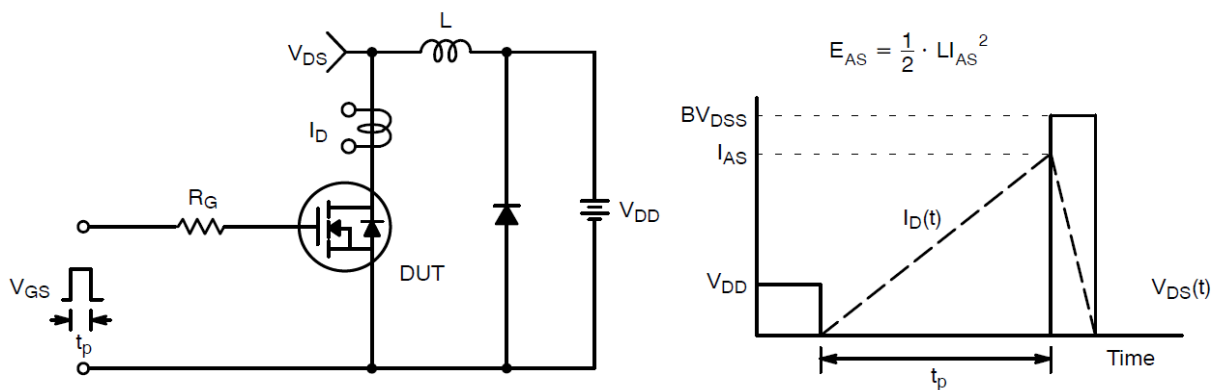
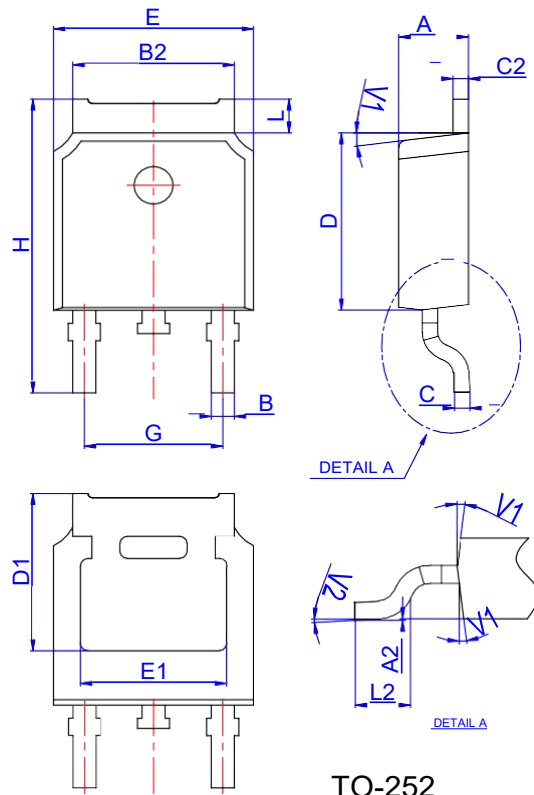


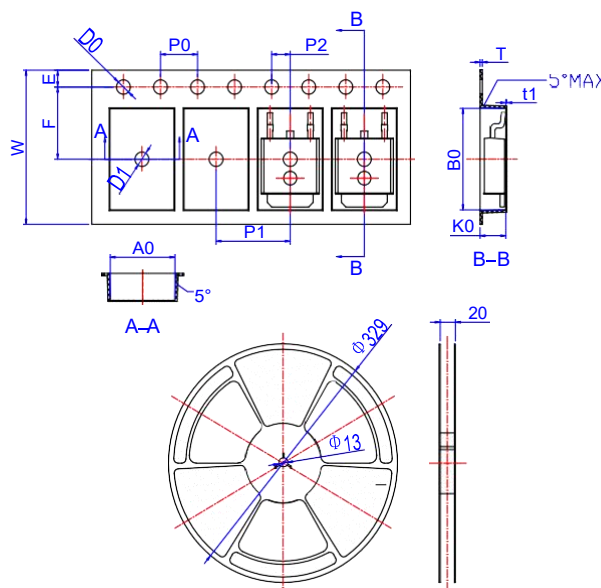
Figure 16: Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data TO 252



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-TO-252-4R



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