Features

★ Split Gate Trench MOSFET technology
★ Excellent package for heat dissipation
★ High density cell design for low RDS(ON)

Product Summary

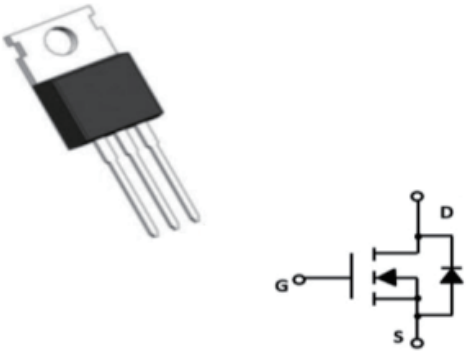
RoHS

BVDSS	RDSON	ID
120V	6mΩ	125A

Description

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

TO-220AB Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{DS}	Drain-to-Source Voltage		120	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	125	A
		T_C = 100°C	80	
I_{DM}	Pulsed Drain Current (1)		320	A
E_{AS}	Single Pulsed Avalanche Energy (2)		326	mJ
P_D	Power Dissipation	T_C = 25°C	119	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient(3)		52	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.05	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C
T_L	Maximum Temperature for Soldering		260	°C

Electrical Characteristics (T_J =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	120	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V,	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	2.5	3	3.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	V_{GS}= 10V, I_D= 20A	-	6	7.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=60V, V_{GS}=0V, f=1.0MHz	-	3614	-	pF
C_{oss}	Output Capacitance		-	423	-	pF
C_{rss}	Reverse Transfer Capacitance		-	12	-	pF
R_g	Gate Resistance		-	0.84	-	Ω
Resistive Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}= 60V, I_D= 20A, V_{GS}= 0~10V	-	60.8	-	nC
Q_{gs}	Gate-Source Charge		-	18.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	14.7	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}= 60V, I_D= 20A, V_{GS}= 10V R_G = 5Ω	-	20	-	ns
t_r	Turn-on Rise Time		-	65	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	32	-	ns
t_f	Turn-off Fall Time		-	49	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	95	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= 20A	-	0.83	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	I_S=40A,dI/dt=100A/μs	-	60	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	109	-	nC

Notes:

1.Repetitive rating; pulse width limited by maximum junction temperature

2.V_{DD}=60V, L=0.5mH, Rg=25Ω, Starting T_J=25 °C

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Typ. output characteristics

$I_D=f(V_{DS})$

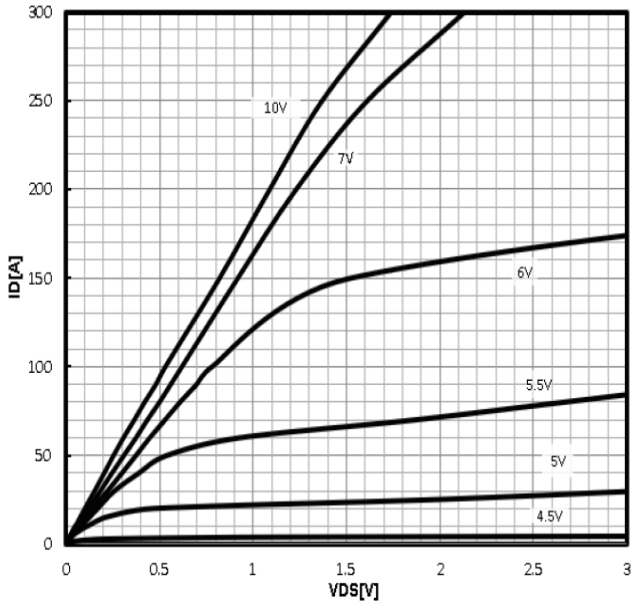


Figure 2: Typ. drain-source on resistance

$R_{DS(on)}=f(I_D)$

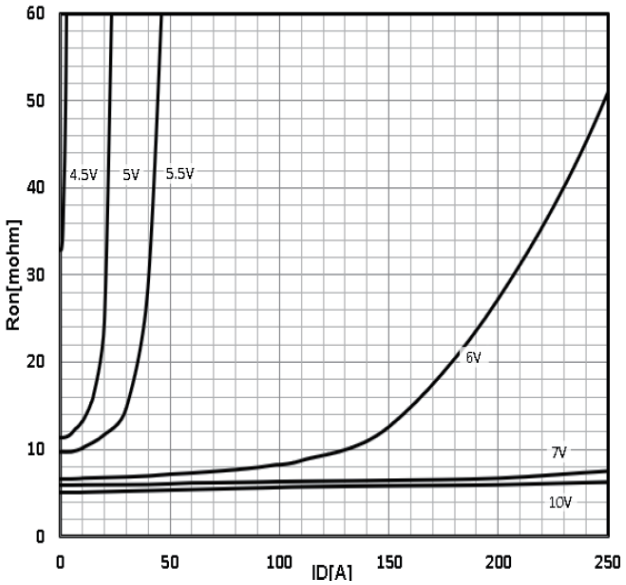


Figure 3:Typ. transfer characteristics

$I_D=f(V_{GS})$

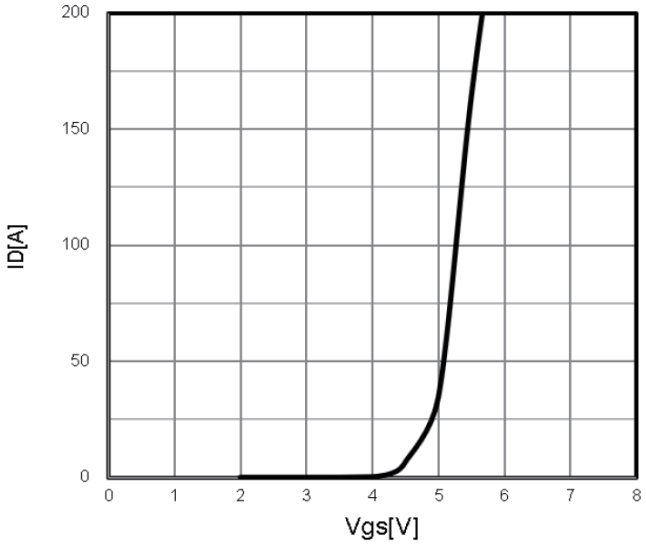
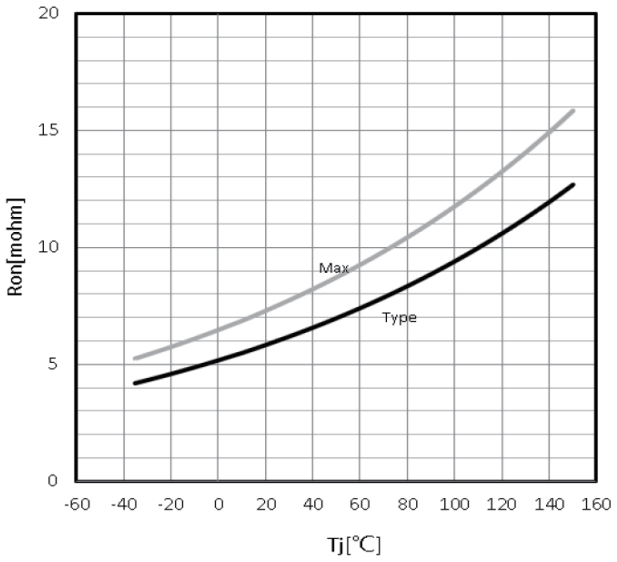


Figure 4: Drain-source on-state resistance

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



Typical Performance Characteristics

Figure 5:Gate Threshold Voltage

$V_{TH}=f(T_j)$; $I_D=250uA$

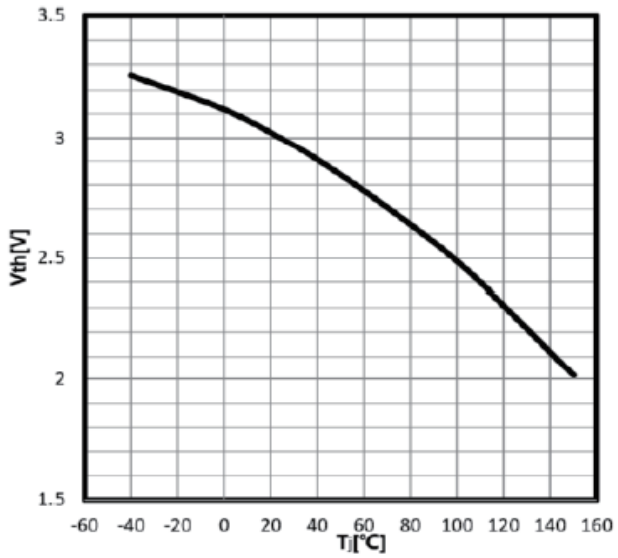


Figure 6:Drain-source breakdown voltage

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

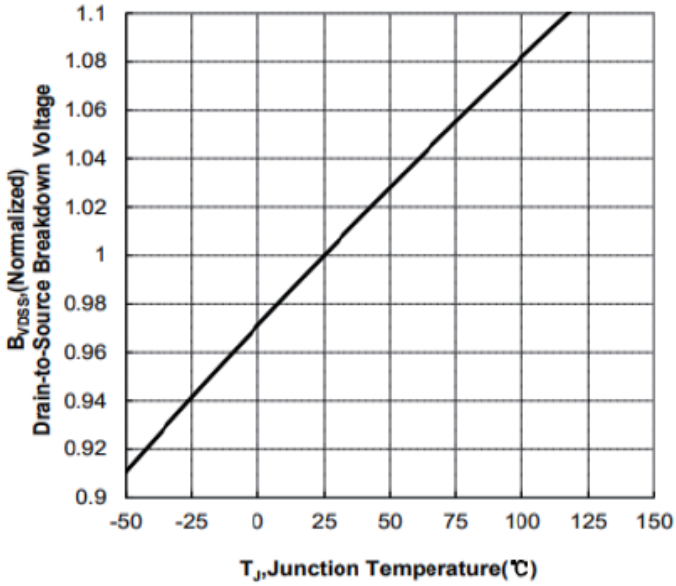


Figure 7:Typ. gate charge

$V_{GS}=f(Q_{gate})$

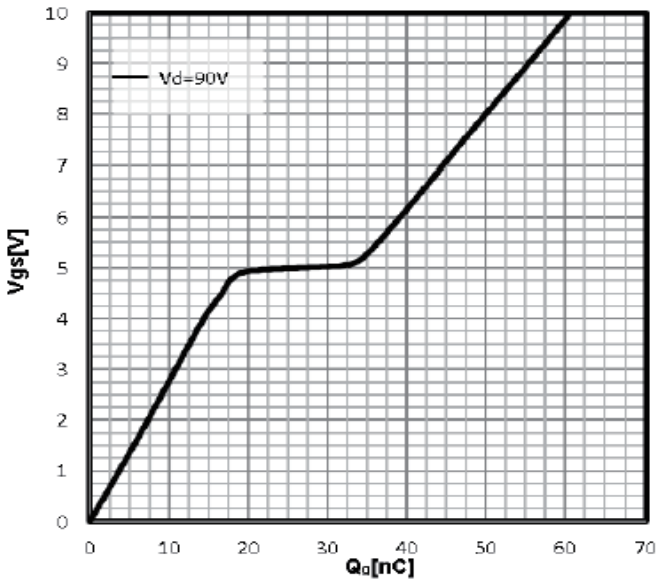
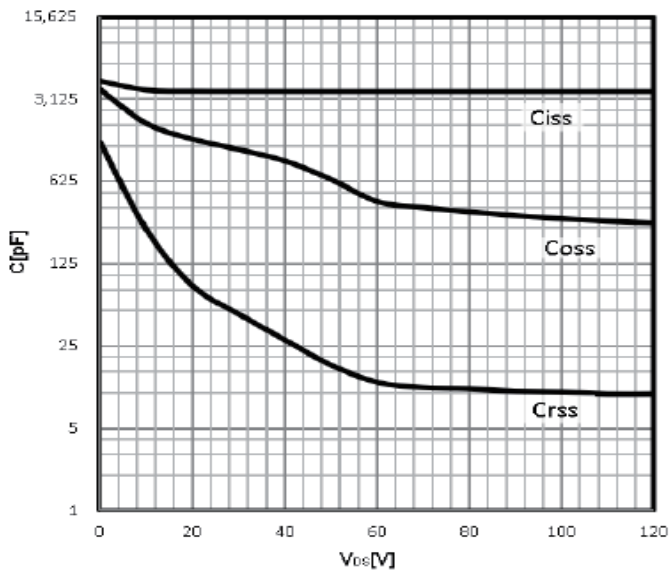


Figure 8:Typ. capacitances

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



Typical Performance Characteristics

Figure 9:Power Dissipation

$P_{tot}=f(T_j)$

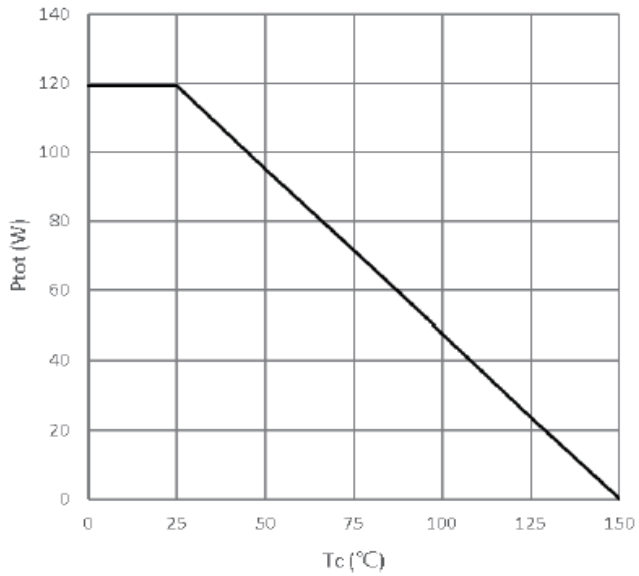


Figure 10:Maximum Drain Current

$I_D=f(T_C)$

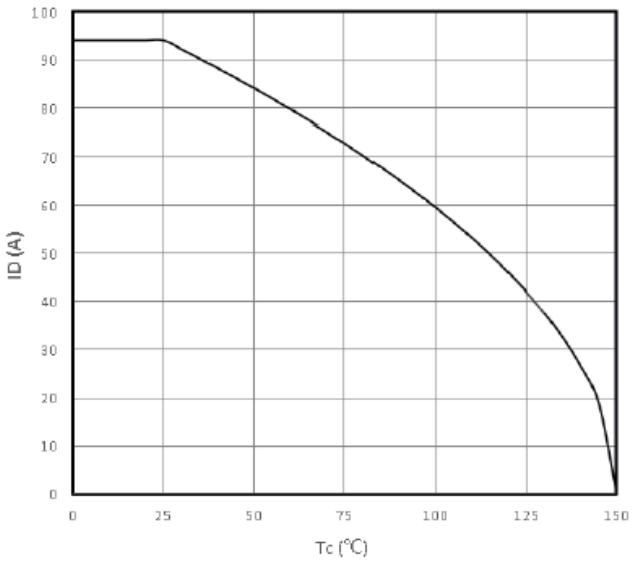


Figure 11:Safe operating area

$I_D=f(V_{DS})$

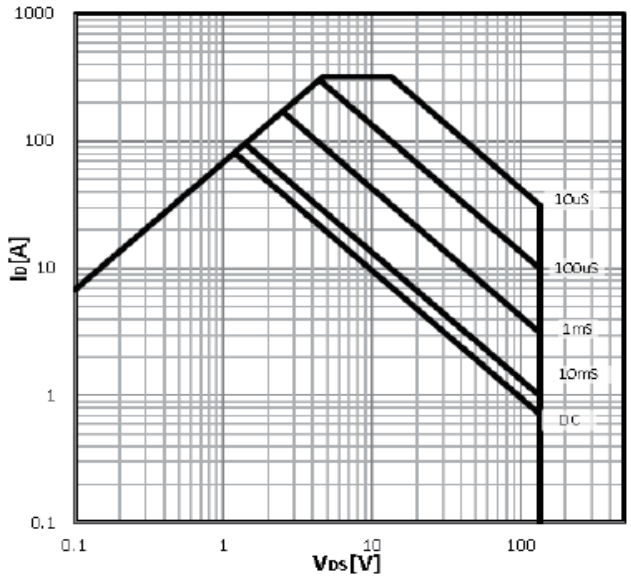
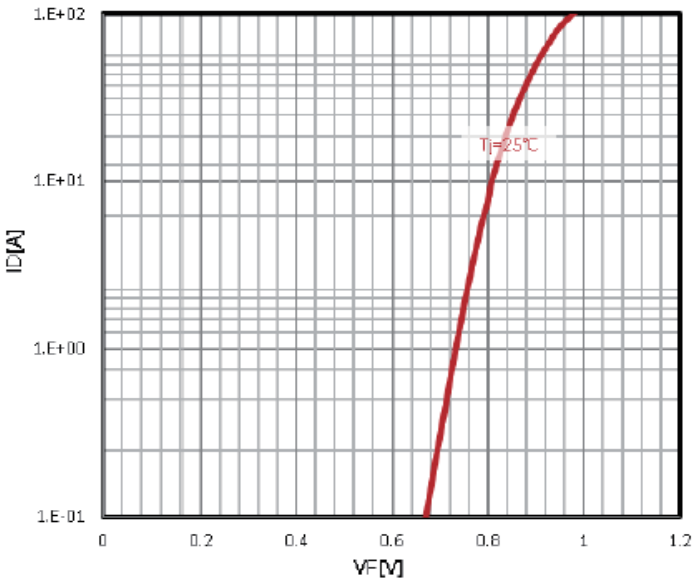


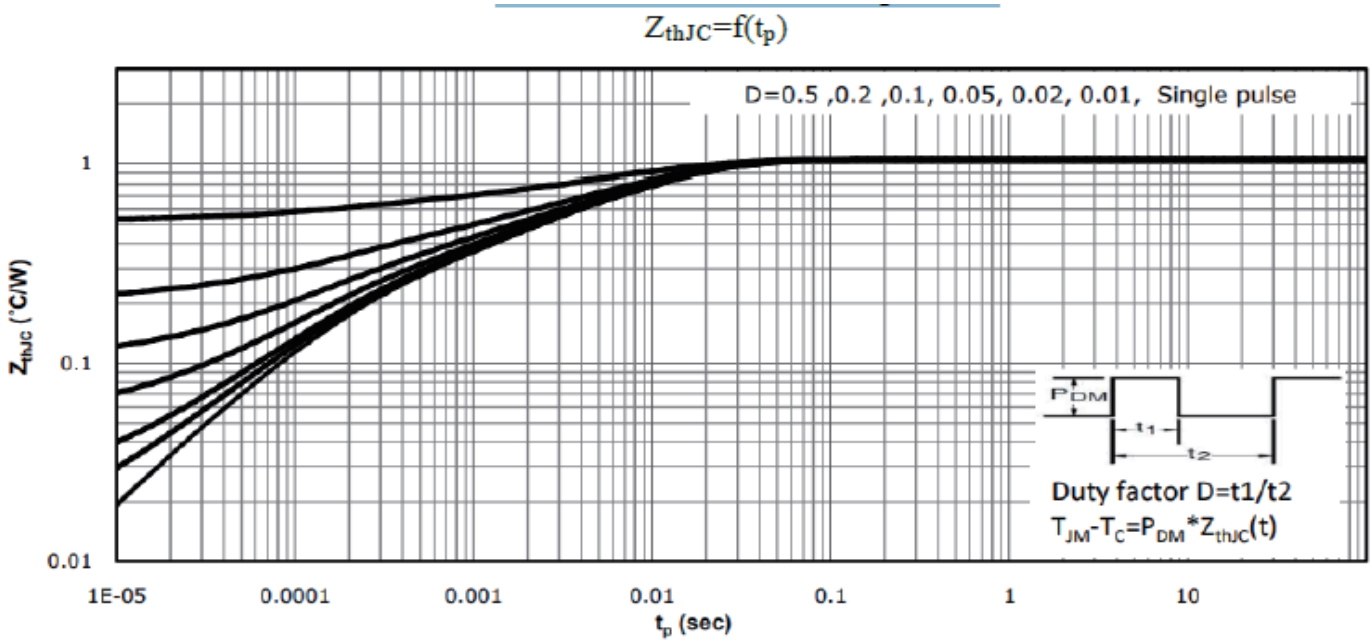
Figure 12:Body Diode Forward Voltage V

$I_F=f(V_{GS})$

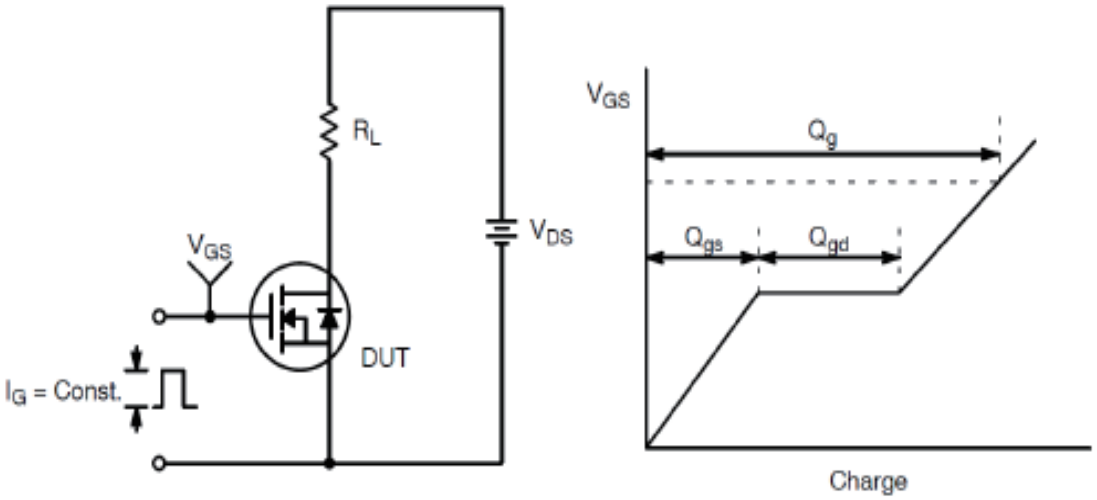


Typical Performance Characteristics

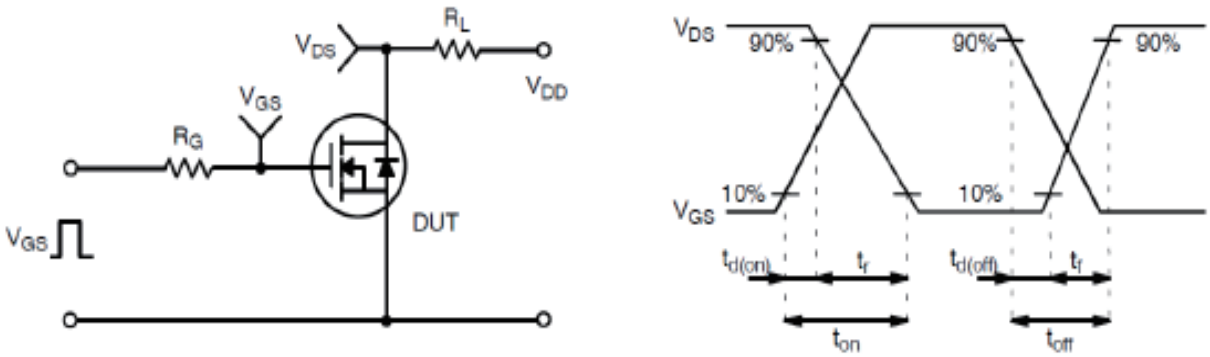
Figure 7:Max. transient thermal impedan



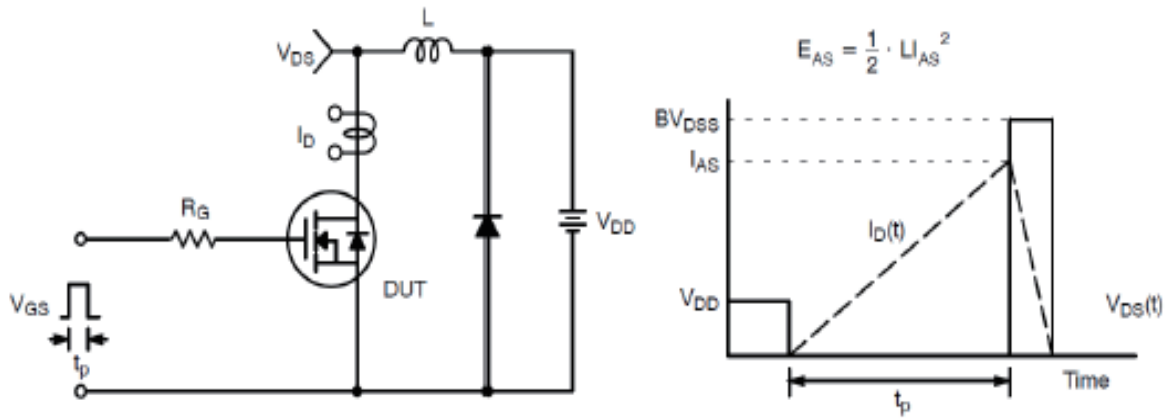
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

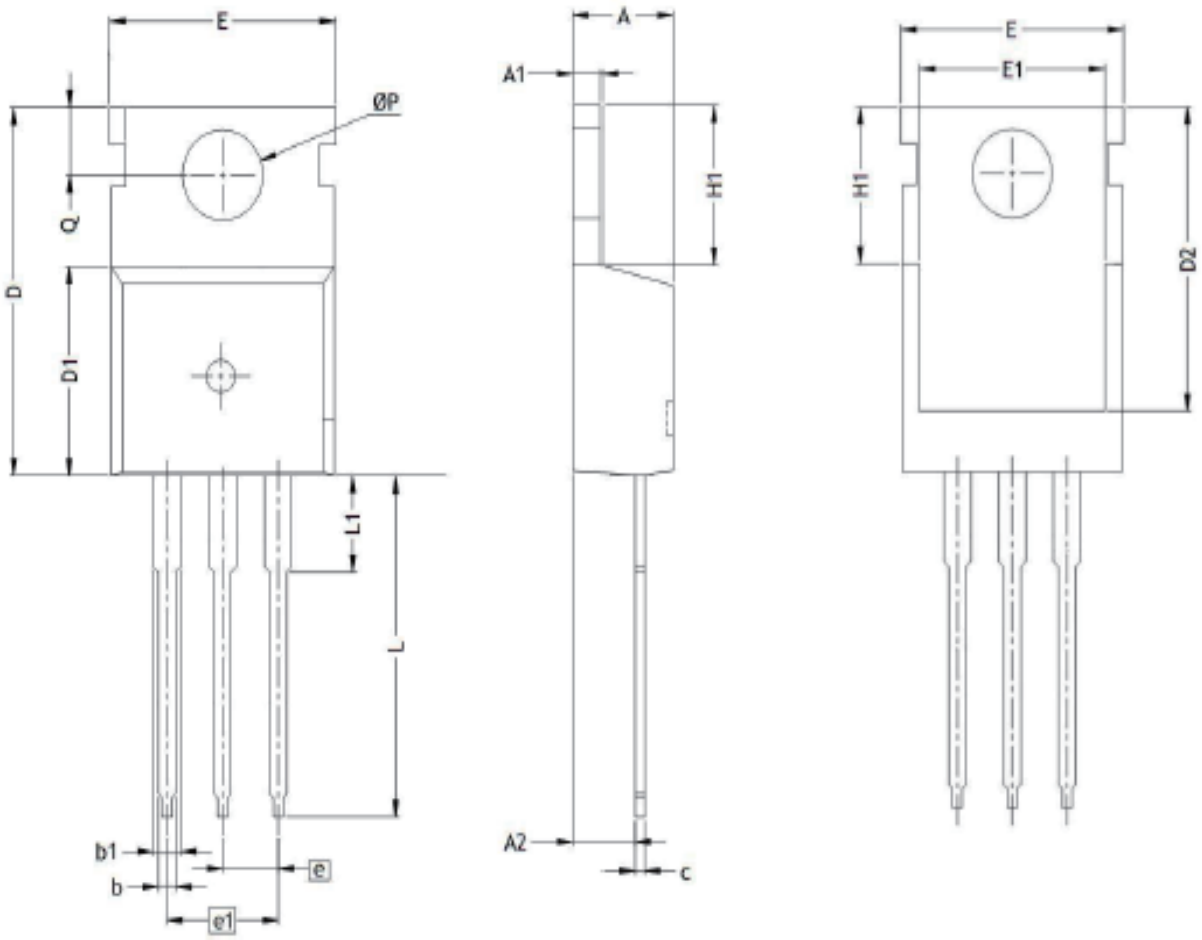


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

Mechanical Dimensions for TO-220AB



UNIT: mm

SYMBOLS	A	A1	A2	b	b1	c	D	D1	D2	E	E1	e
MIN	4.25	1.25	2.35	0.7	1.15	0.45	14.35	8.80	13.05	9.90	7.85	2.540
MAX	4.65	1.35	2.55	0.9	1.75	0.60	15.95	9.50	13.65	10.35	8.85	BSC
SYMBOLS	e1	H1	L	L1	Q	ϕP						
MIN	5.080	6.30	12.85	2.85	2.70	3.50						
MAX	BSC	6.65	13.50	3.25	2.90	3.70						

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by HL ***manufacturer:***

Other Similar products are found below :

IRFD120 JANTX2N5237 2SK2267(Q) BUK455-60A/B TK100A10N1,S4X(S MIC4420CM-TR VN1206L NDP4060 SI4482DY IRS2092STRPBF-EL IPS70R2K0CEAKMA1 TK31J60W5,S1VQ(O TK31J60W,S1VQ(O TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 IPS60R360PFD7SAKMA1 DMN2990UFB-7B SSM3K35CT,L3F IPLK60R1K0PFD7ATMA1 2N7002W-G MCAC30N06Y-TP IPWS65R035CFD7AXKSA1 MCQ7328-TP SSM3J143TU,LXHF DMN12M3UCA6-7 PJMF280N65E1_T0_00201 PJMF380N65E1_T0_00201 PJMF280N60E1_T0_00201 PJMF600N65E1_T0_00201 PJMF900N65E1_T0_00201