

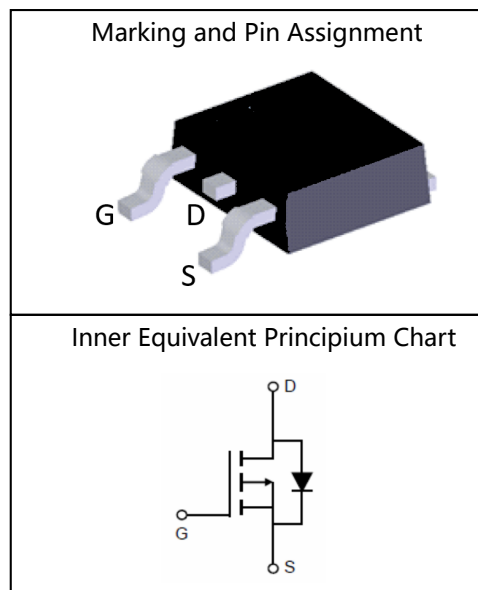
The SR45P10DL uses advanced SGT technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is TO-252, which accords with the ROHS standard and Halogen Free standard.

Features:

- Fast Switching
- Low Gate Charge and $R_{DS(ON)}$
- Low Reverse transfer capacitances

Applications:

- DC-DC converter
- Portable Equipment
- Power management



Package Marking and Ordering Information:

Marking	Part #	Package	Packing
SR45P10DL	SR45P10DL	TO-252	Reel

Absolute Maximum Ratings:

Symbol	Parameter		Value	Units
V_{DSS}	Drain-to-Source Voltage		-100	V
I_D	Continuous Drain Current	$T_C = 25\text{ }^{\circ}\text{C}$	-28	A
	Continuous Drain Current	$T_C = 100\text{ }^{\circ}\text{C}$	-16.5	A
I_{DM}^{a1}	Pulsed Drain Current		-105	A
E_{AS}^{a2}	Single pulse avalanche energy		225	mJ
I_{AR}	Single pulse avalanche current		30	A
V_{GS}	Gate-to-Source Voltage		± 20	V
P_D	Power Dissipation		120	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	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.0	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics (TA= 25°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 =-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	-1.0	-1.5	-2.5	V
R _{DS(ON)1}	Drain-to-Source On-Resistance	V _{GS} =-10V, I _D =-20A	--	46	58	mΩ
R _{DS(ON)2}	Drain-to-Source On-Resistance	V _{GS} =-4.5V, I _D =-10A	--	55	65	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-20A	--	20	--	S

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C _{iss}	Input Capacitance	V _{GS} = 0V	--	2100	--	pF
C _{oss}	Output Capacitance	V _{DS} = -50V	--	168	--	
C _{rss}	Reverse Transfer Capacitance	f = 1.0MHz	--	26	--	
R _g	Gate resistance	V _{GS} = 0V, V _{DS} Open	--	2.8	--	Ω

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	I _D = -20A	--	8.2	--	ns
t _r	Rise Time	V _{DS} = -50V	--	19.6	--	
t _{d(OFF)}	Turn-Off Delay Time	V _{GS} = -10V	--	62.8	--	
t _f	Fall Time	R _G = 5Ω	--	41.4	--	
Q _g	Total Gate Charge	V _{GS} = -10V	--	38	--	nC
Q _{gs}	Gate Source Charge	V _{DS} = -50V	--	6.4	--	
Q _{gd}	Gate Drain Charge	I _D = -20A	--	6.8	--	

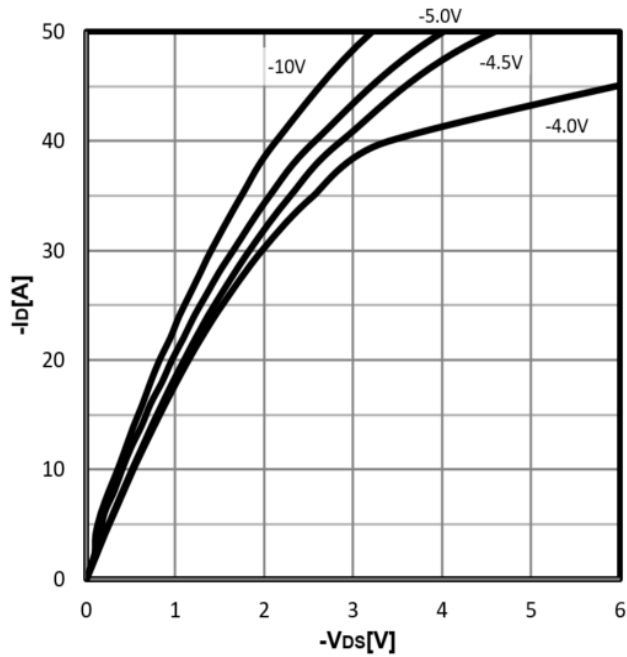
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V _{SD}	Diode Forward Voltage	I _S =-20A, V _{GS} =0V	--	--	1.2	V
t _{rr}	Reverse Recovery time	I _S =-20A, V _{DD} =-50V	--	68	--	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	--	200	--	nC

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

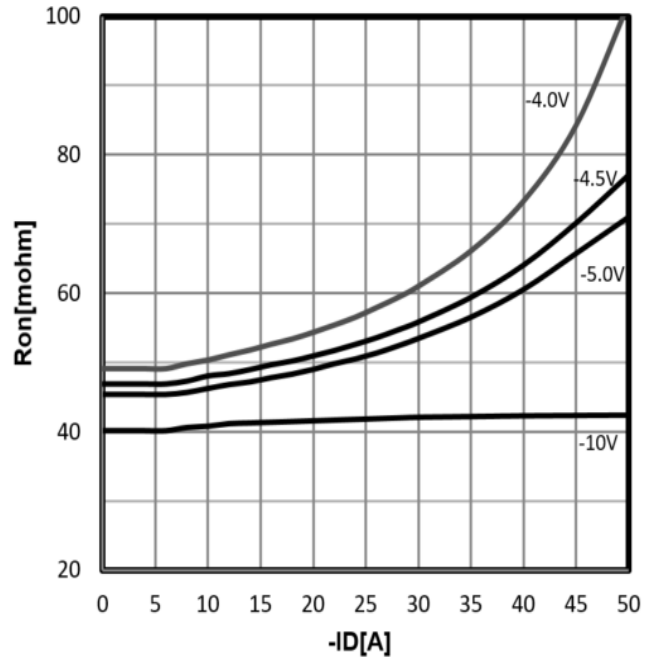
a²: V_{DD}=-50V, L=0.5mH, R_g=25Ω, Starting T_J=25 °C

Characteristics Curve:
Typ. output characteristics

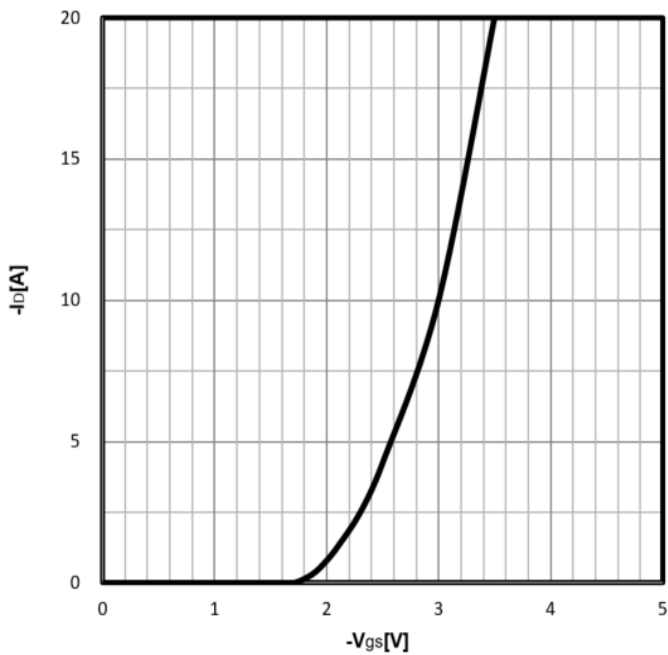
$$-I_D = f(-V_{DS})$$


Typ. drain-source on resistance

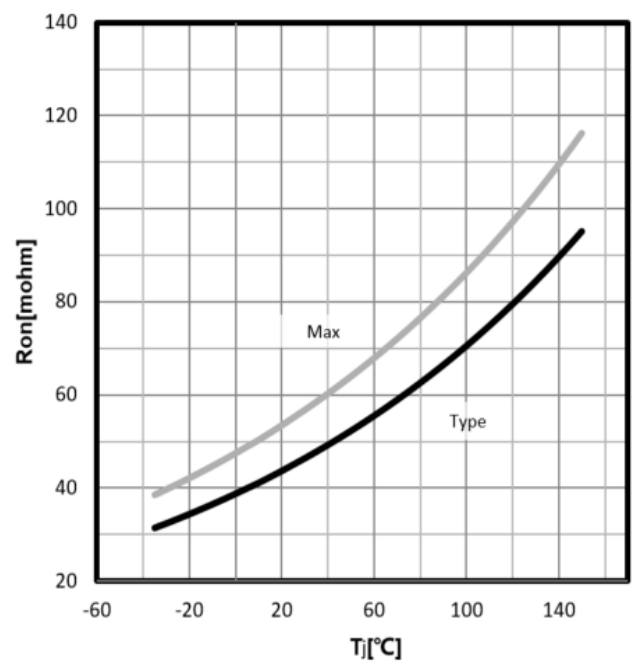
$$R_{DS(on)} = f(-I_D)$$


Typ. transfer characteristics

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

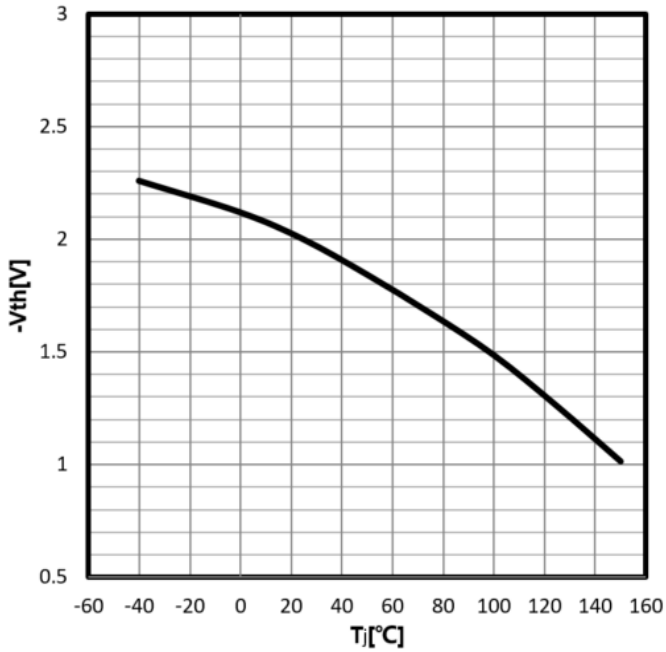

Drain-source on-state resistance

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



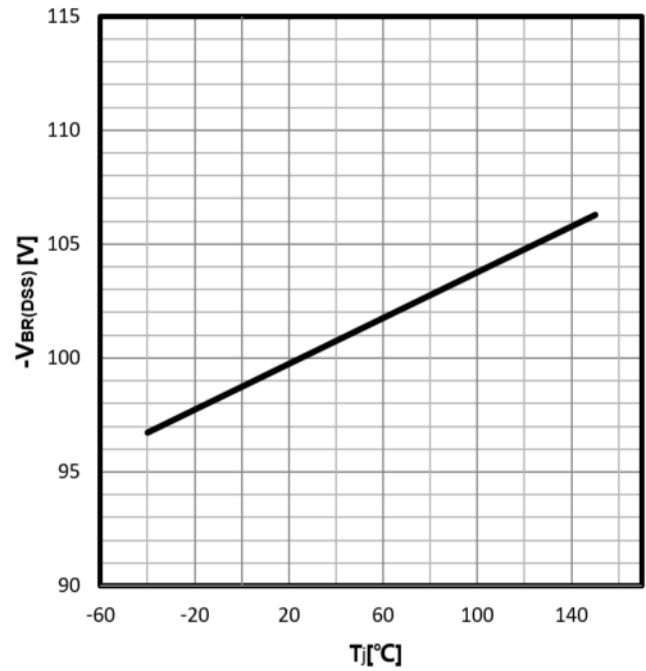
Gate Threshold Voltage

$$-V_{TH}=f(T_j); I_D=-250\mu A$$



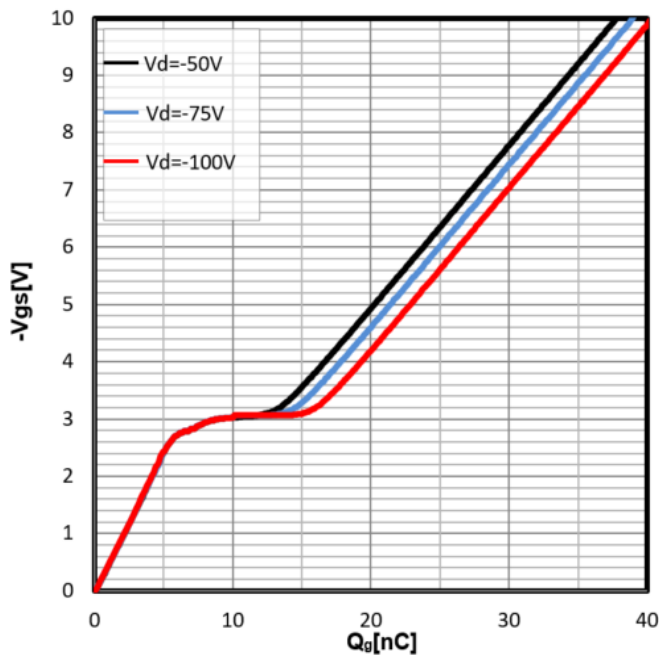
Drain-source breakdown voltage

$$-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$$



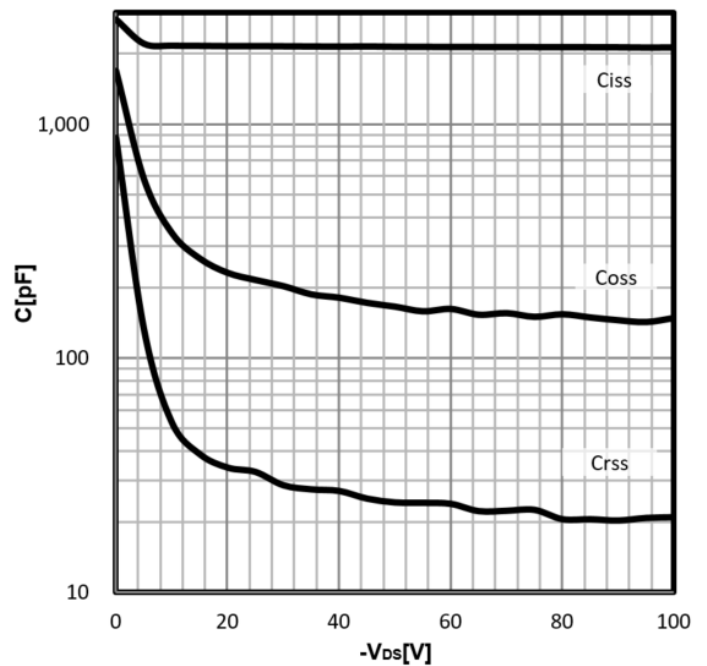
Typ. gate charge

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

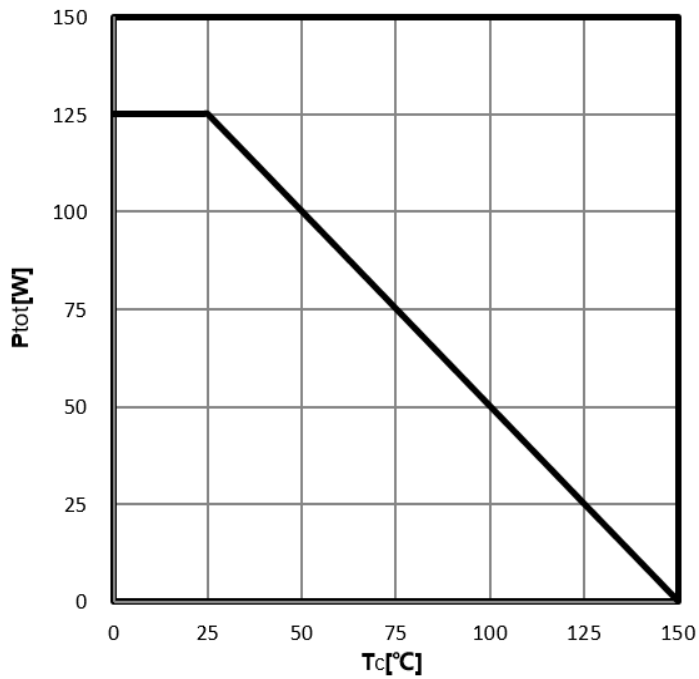


Typ. capacitances

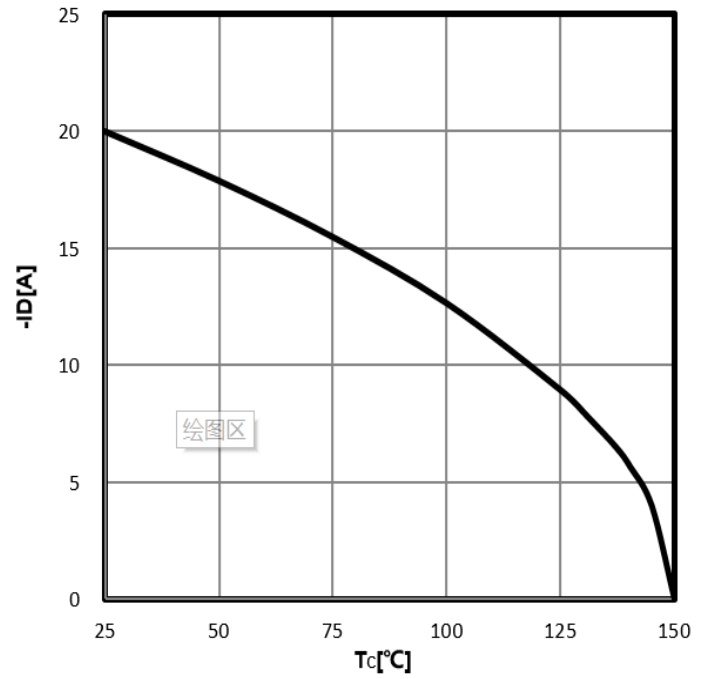
$$C=f(-V_{DS}); V_{GS}=0V; f=1MHz$$



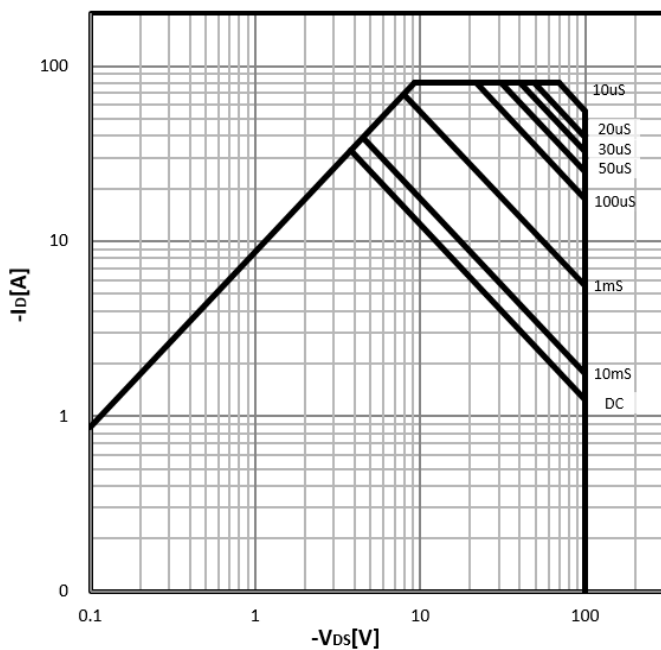
Power Dissipation
 $P_{tot}=f(T_C)$



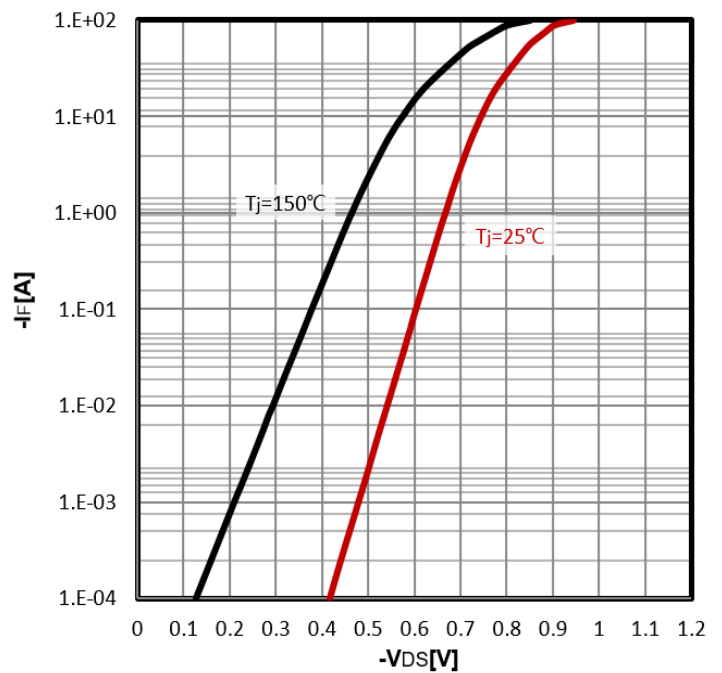
Maximum Drain Current
 $-I_D=f(T_C)$



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



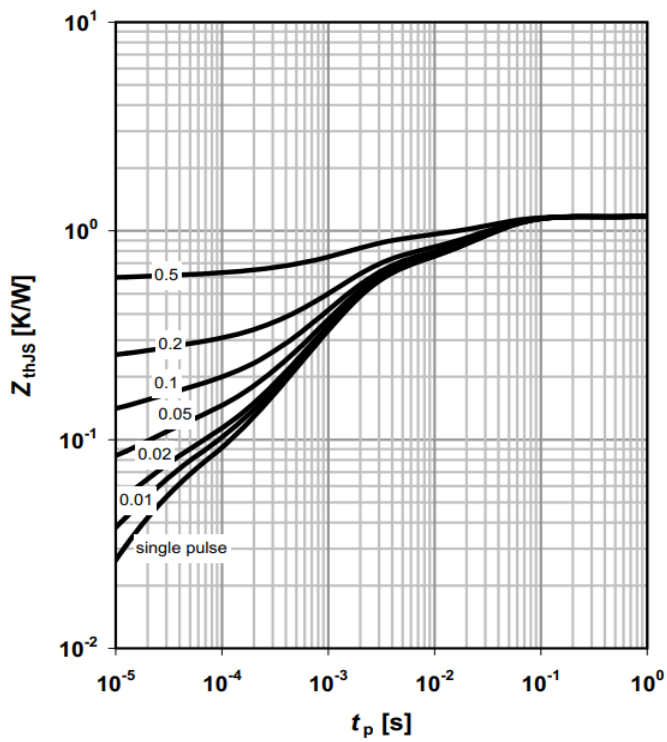
Body Diode Forward Voltage Variation
 $-I_F=f(-V_{DS})$

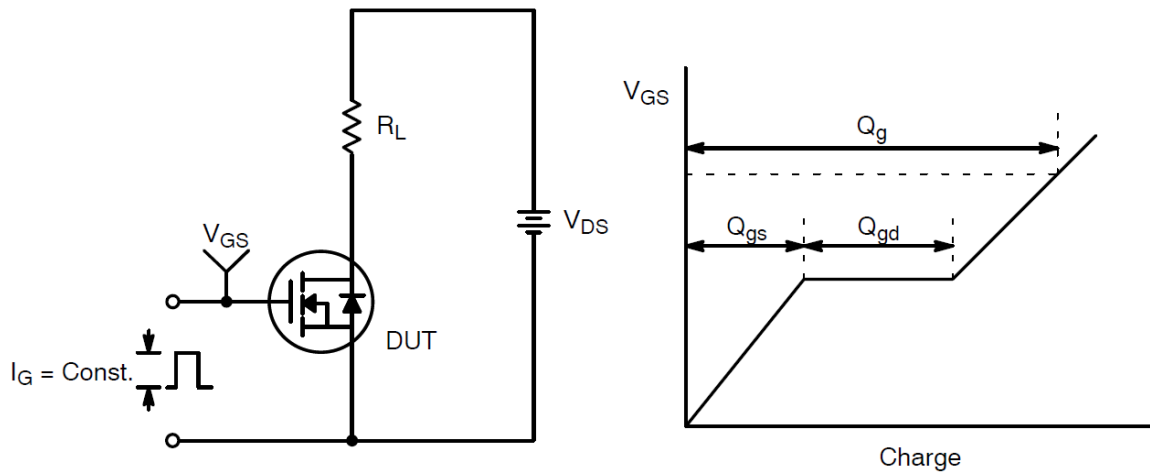
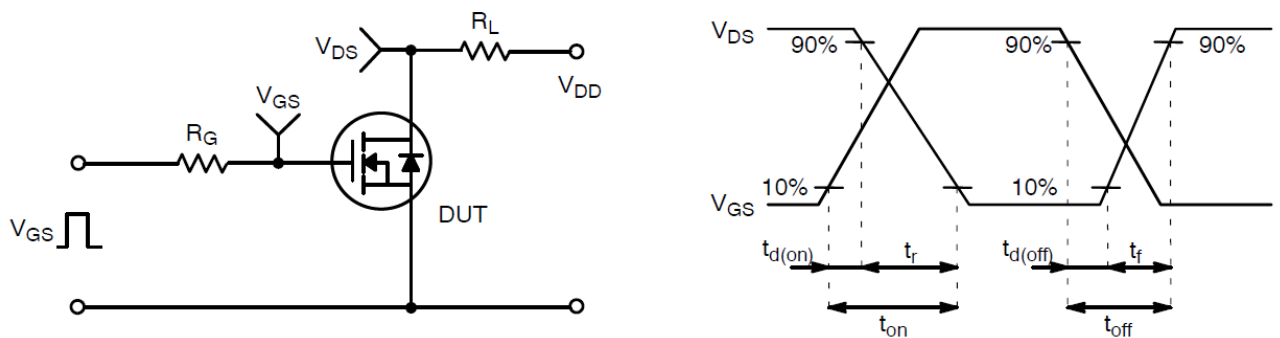
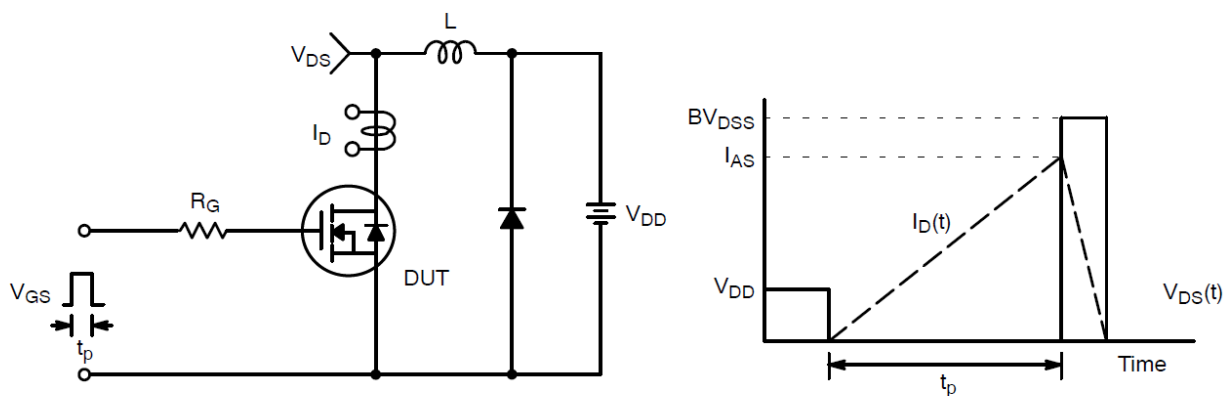


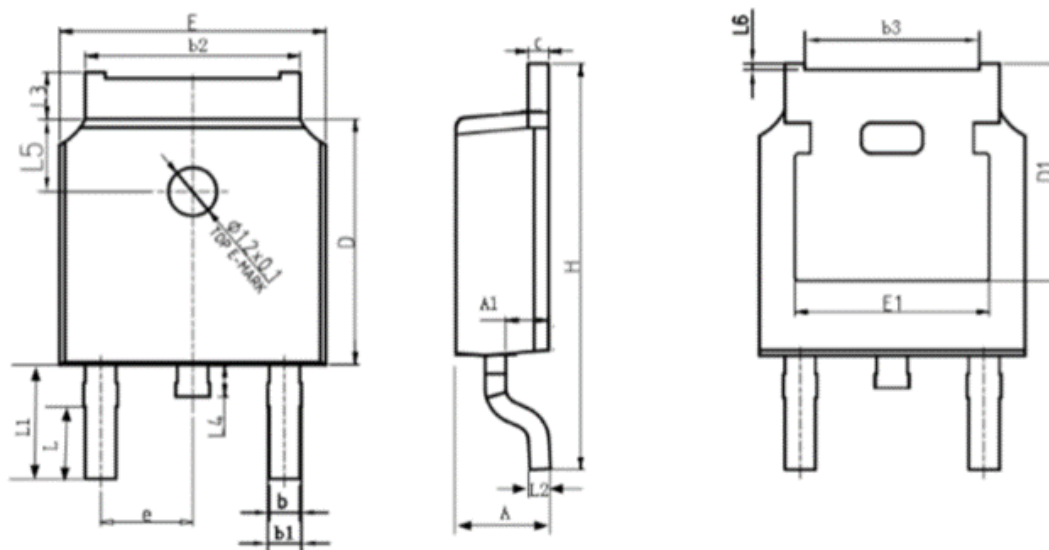


Max. transient thermal impedance

$$Z_{thJC}=f(t_p)$$



Test Circuit and Waveform:

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

Package Information:


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.056	0.061
A1	0.970	1.17	0.025	0.030
b	0.720	0.850	0.018	0.022
b1	0.720	0.930	0.018	0.024
b2	5.230	5.460	0.133	0.139
b3	4.270	4.370	0.108	0.111
c	0.470	0.580	0.012	0.015
D	6.000	6.200	0.152	0.157
D1	5.300 TYP.		0.135	
E	6.500	6.700	0.165	0.170
E1	4.700	4.920	0.119	0.125
e	2.286 TYP		0.058	
L	1.400	1.700	0.036	0.043
L1	2.900 TYP.		0.074	
L2	0.510 TYP.		0.013	
L3	0.900	1.250	0.023	0.032
L4	0.600	1.000	0.015	0.025
L5	1.700	1.900	0.043	0.048
L6	0	0.1223	0.000	0.003

产品名称: SR45P10DL

文档类型: 说明书

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公司主页: WWW.SXCAI.COM

版 本: 1.0

修改记录:

1. 原本

版 本: 2.0

修改记录:

1. 更改ID电流, $R_{DS(ON)}$
