

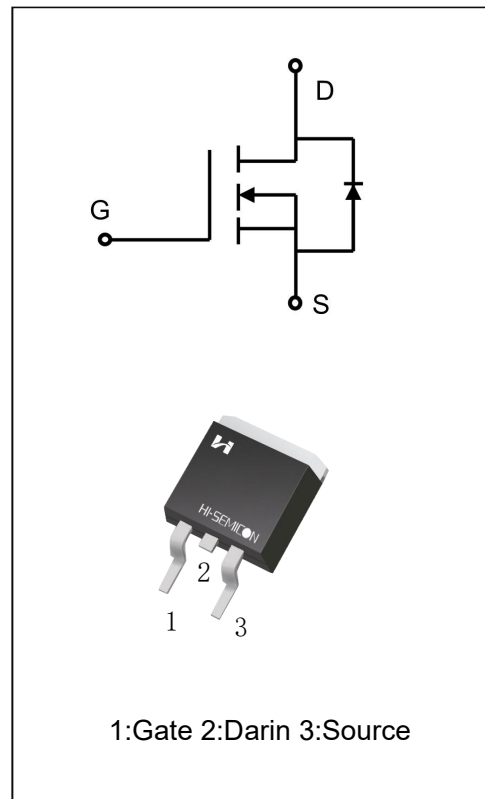
100V 150A N-CHANNEL MOSFET

GENERAL DESCRIPTION

The SFA10015T uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications.

Features

- ◆ $V_{DS}=100V, I_D=150A$
- ◆ $R_{DS(ON)}$
TYP: $3.6m\Omega @ V_{GS}=10V$
- ◆ Excellent package for good heat dissipation
- ◆ Fully characterized avalanche voltage and current
- ◆ Good stability and uniformity with high EAS
- ◆ High density cell design for ultra low Rdson
- ◆ Special process technology for high ESD capability
- ◆ Exceptional onresistance and maximum DC current capability



ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFA10015T	TO-263-2L	SFA10015T	Pb Free	Reel

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	V
Drain Current	T _C = 25°C	I _D	150	A
	T _C = 100°C		105	
Drain Current Pulsed(Note 1)		I _{DM}	420	A
Power Dissipation(T _C =25°C) -Derate above 25°C		P _D	270	W
			2.16	W/°C
Single Pulsed Avalanche Energy (Note 2)		E _{AS}	375	mJ
Operation Junction Temperature Range		T _J	-55~+175	°C
Storage Temperature Range		T _{stg}	-55~+175	°C
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		TL	300	°C

THERMAL CHARACTERISTICS

Char acteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	1.8	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B _{VDSS}	V _{GS} =0V, I _D =250μA	100	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	--	--	1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	--	--	100	nA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =-20V, V _{DS} =0V	--	--	-100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D =250μA	2.0	3.0	4.0	V
Static Drain- Source On State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =50A	--	3.6	4.5	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V	--	6680	--	pF
Output Capacitance	C _{oss}		--	1680	--	
Reverse Transfer Capacitance	C _{rss}	f=1.0MHZ	--	78	--	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =50V, R _G =6.0Ω I _D =1A, V _{GS} =10V	--	24	--	ns
Turn-on Rise Time	t _r		--	31.8	--	
Turn-off Delay Time	t _{d(off)}		--	157	--	
Turn-off Fall Time	t _f		--	115	--	

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Total Gate Charge	Q_g	$V_{DS}=80V, I_D=10.0A$ $V_{GS}=10V$ (Note 3.4)	--	110	--	nC
Gate-Source Charge	Q_{gs}		--	11.5	--	
Gate-Drain Charge	Q_{gd}		--	28	--	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	--	--	1	V

- 1.Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- 2.Essentially independent of operating temperature

Typical Performance Characteristics

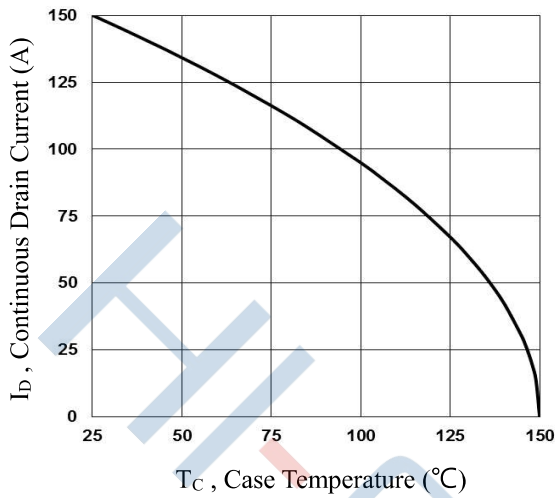


Fig.1 Continuous Drain Current vs. T_c

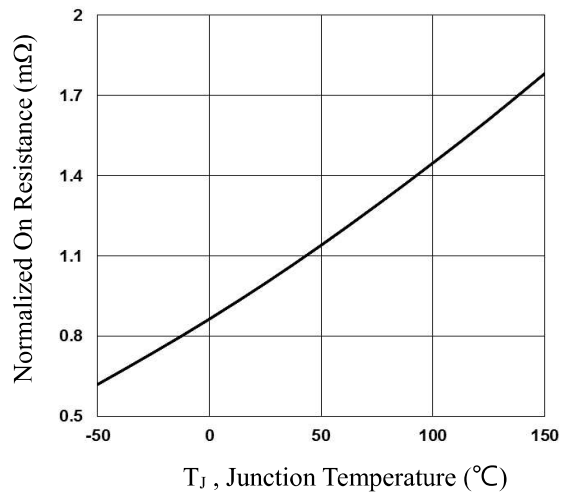


Fig.2 Normalized RDSON vs. T_j

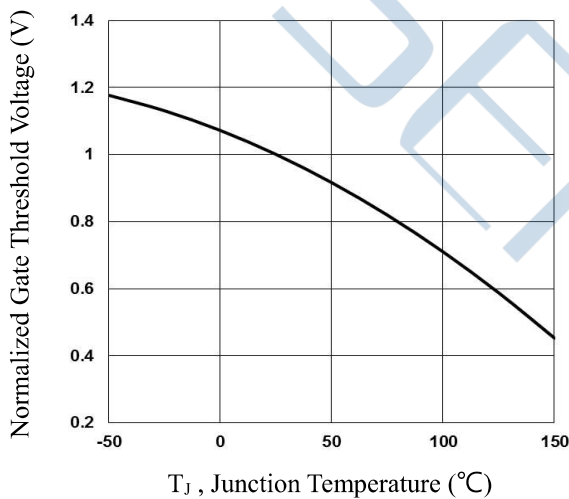


Fig.3 Normalized V_{th} vs. T_j

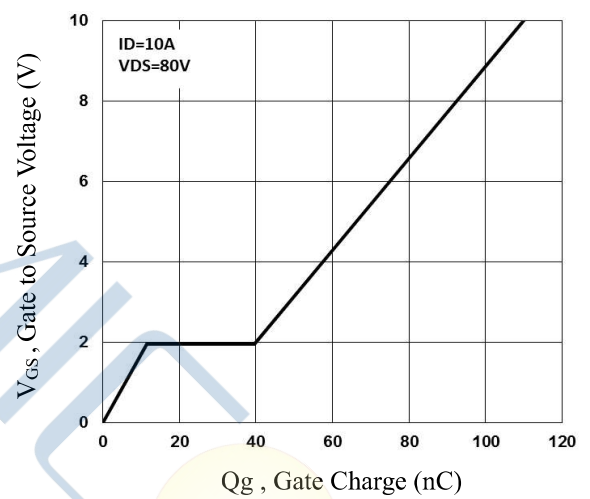


Fig.4 Gate Charge Characteristics

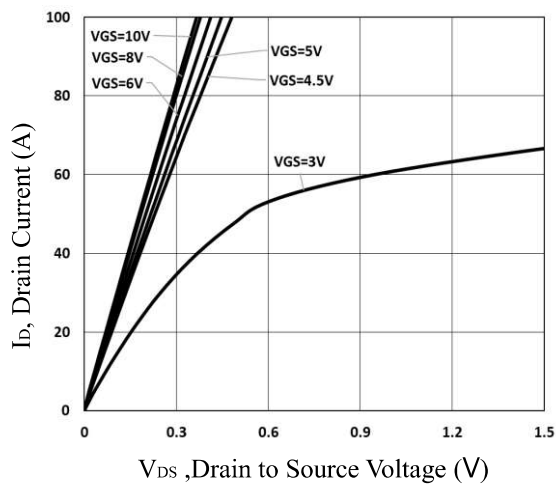


Fig.5 Typical Output Characteristics

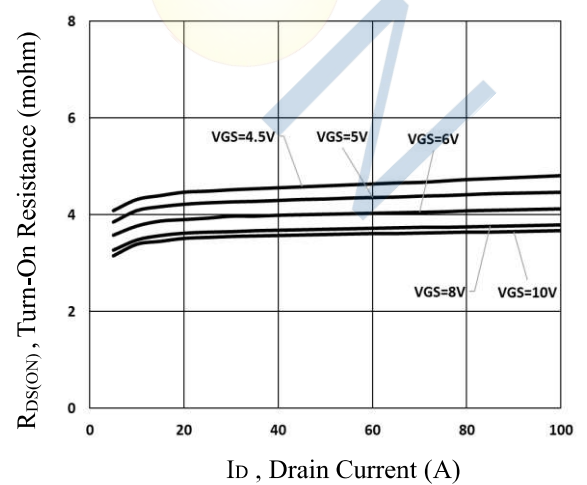


Fig.6 Turn-On Resistance vs. I_D

Typical Performance Characteristics

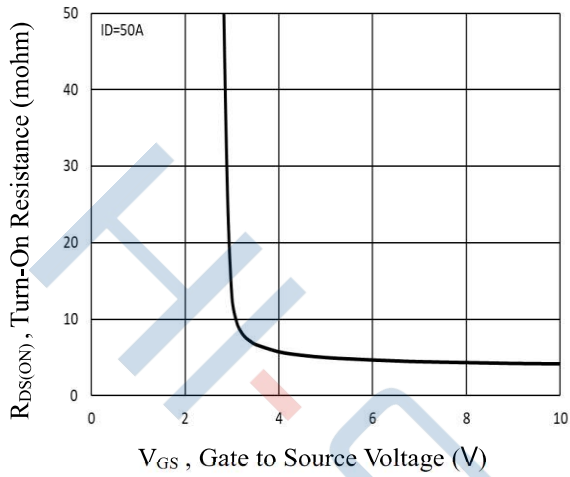


Fig.7 RDSON vs. VGS

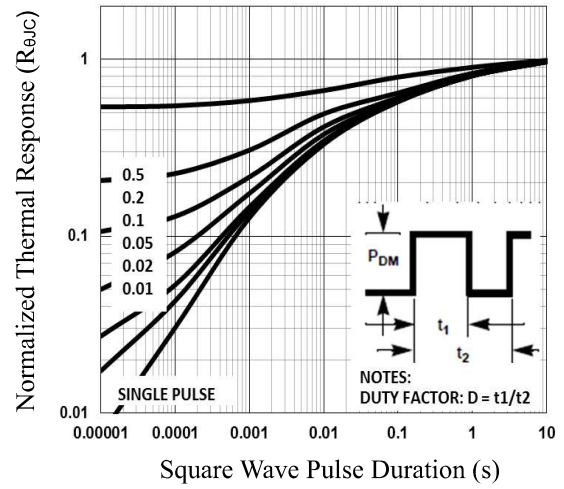


Fig.8 Normalized Transient Impedance

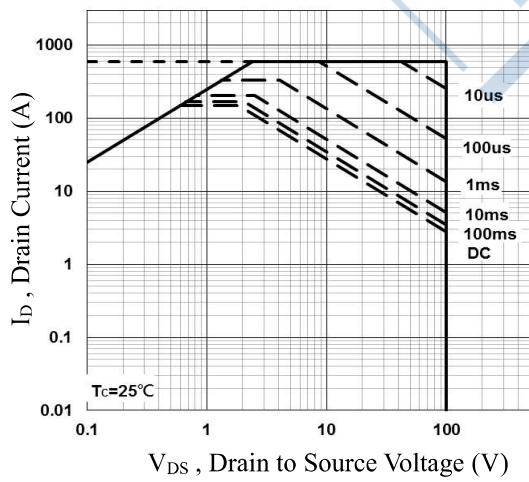
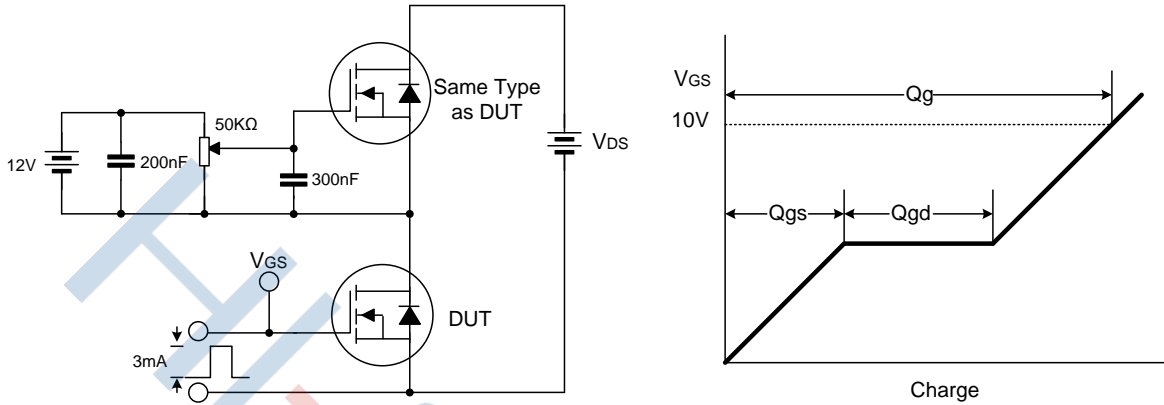


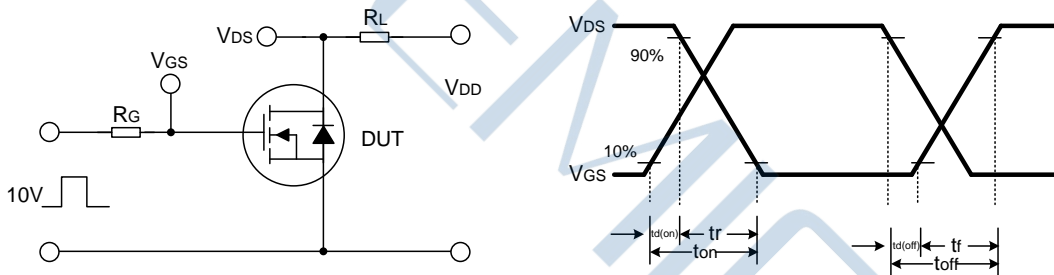
Fig.9 Maximum Safe Operation Area

Test circuits

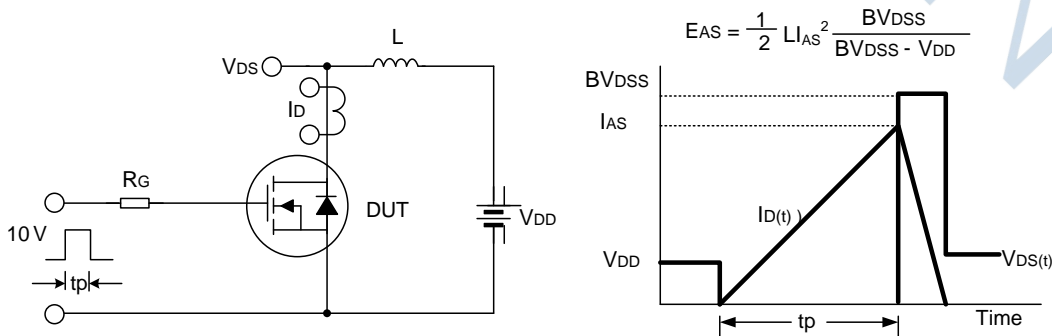
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform

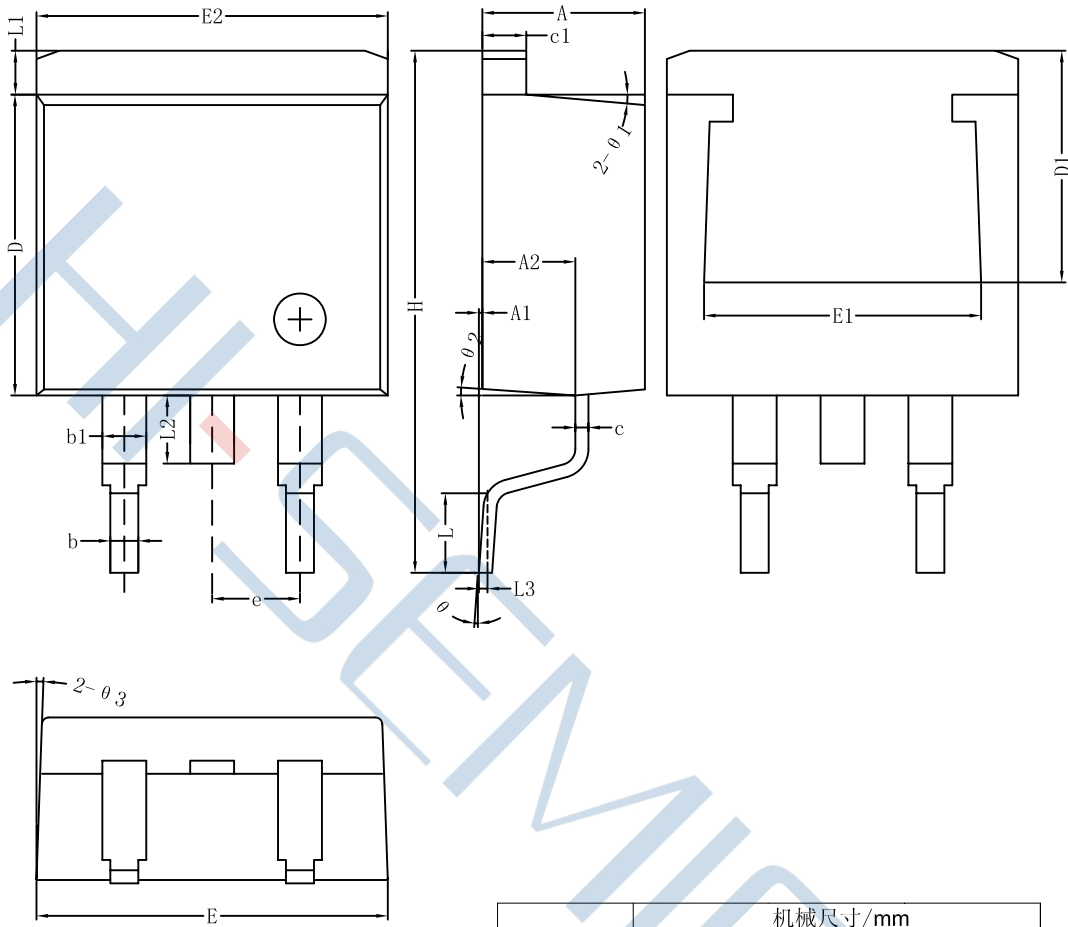


Unclamped Inductive Switching Test Circuit & Waveform



Package Dimensions of TO-263-2L

Unit:mm



符号	机械尺寸/mm		
	最小值	典型值	最大值
A	4.55	4.70	4.85
A1	0	0.10	0.25
A2	2.59	2.69	2.89
b	0.71	0.81	0.96
b1		1.27	
c	0.36	0.38	0.61
c1	1.17	1.27	1.37
D	8.55	8.70	8.85
D1	6.70		7.70
E	10.01	10.16	10.31
E1	7.2		8.1
E2	9.98	10.08	10.18
e		2.54	
H	14.7	15.1	15.5
L	2.00	2.30	2.70
L1	1.17	1.27	1.40
L2			2.20
L3		0.25BSC	
θ	0	-	8°
θ1		5°	
θ2		4°	
θ3		4°	

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