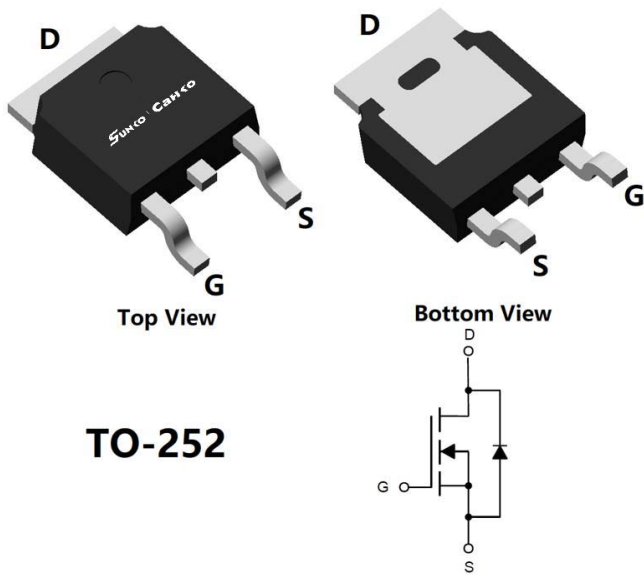


SCD150G15A

N-Channel Enhancement Mode Field Effect Transistor



Product Summary

• V_{DS}	150V
• I_D	11A
• $R_{DS(ON)}$ (at $V_{GS}=10V$)	<150mΩ
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<170mΩ
• 100% EAS Tested	
• 100% ∇V_{DS} Tested	

General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor

Limiting Values

Parameter	Conditions		Symbol	Min	Max	Unit
Drain-source Voltage			V _{DS}	-	150	V
Gate-source Voltage			V _{GS}	-20	20	
Continuous Drain Current (Note 1,2)	Steady-State	T _A =25°C, V _{GS} = 10V	I _D	-	2.7	A
		T _A =100°C, V _{GS} = 10V		-	1.7	
Continuous Drain Current (Note 1,3)	Steady-State	T _C =25°C, V _{GS} = 10V,Chip limitation		-	11	
		T _C =100°C, V _{GS} = 10V		-	7	
Pulsed Drain Current	T _C =25°C, t _p ≤10μs		I _{DM}	-	22	
Maximum Body-Diode Continuous Current	T _C =25°C		I _S		11	
Avalanche energy (non-repetitive)	T _J =25,V _G =10V, R _G =25Ω, L=0.3mH, I _{AS} =2.8A		EAS	-	1.17	mJ
Total Power Dissipation (Note 1,2)	Steady-State	T _A =25°C	P _D	-	2.5	W
		T _A =100°C		-	1	
Total Power Dissipation (Note 1,3)	Steady-State	T _C =25°C		-	41.6	
		T _C =100°C		-	16.6	
Junction and Storage Temperature Range			T _J ,T _{STG}	-55	150	°C

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient (Note 2)	Steady-State	$R_{\theta JA}$	-	50	$^{\circ}C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	-	3	

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCD150G15A	F1/F2	SCD150G15A	2500	/	25000	13" reel

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■ Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA, T _J =25℃	150	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =150V, V _{GS} =0V, T _J =25℃	-	-	1	μA
		V _{DS} =150V, V _{GS} =0V, T _J =150℃	-	-	100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V, T _J =25℃	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA, T _J =25℃	1.5	2	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A, T _J =25℃	-	118	150	mΩ
		V _{GS} =4.5V, I _D =4A, T _J =25℃	-	132	170	mΩ
Diode Forward Voltage	V _{SD}	I _S =11A, V _{GS} =0V, T _J =25℃	-	0.99	1.3	V
Gate Resistance	R _G	f=1MHz, T _J =25℃, T _J =25℃	-	1.8	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =75V, V _{GS} =0V, f=1MHz, T _J =25℃	-	245	-	pF
Output Capacitance	C _{oss}		-	27	-	
Reverse Transfer Capacitance	C _{rss}		-	3.6	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =75V, I _D =8A, T _J =25℃	-	4.9	-	nC
Gate-Source Charge	Q _{gs}		-	0.3	-	
Gate-Drain Charge	Q _{gd}		-	0.9	-	
Reverse Recovery Charge	Q _{rr}	I _F =8A, di/dt=100A/μs, V _R =75V, T _J =25℃	-	64	-	nC
Reverse Recovery Time	t _{rr}		-	51	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =75V, I _D =8A, R _{GEN} =3Ω, T _J =25℃	-	3.1	-	ns
Turn-on Rise Time	t _r		-	2.7	-	
Turn-off Delay Time	t _{D(off)}		-	7.9	-	
Turn-off Fall Time	t _f		-	2.0	-	

Note:

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with $T_A=25^{\circ}C$. The maximum allowed junction temperature of $150^{\circ}C$. The value in any given application depends on the user's specific board design.
3. Thermal resistance from junction to soldering point (on the exposed drain pad).

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■ Typical Electrical and Thermal Characteristics Diagrams

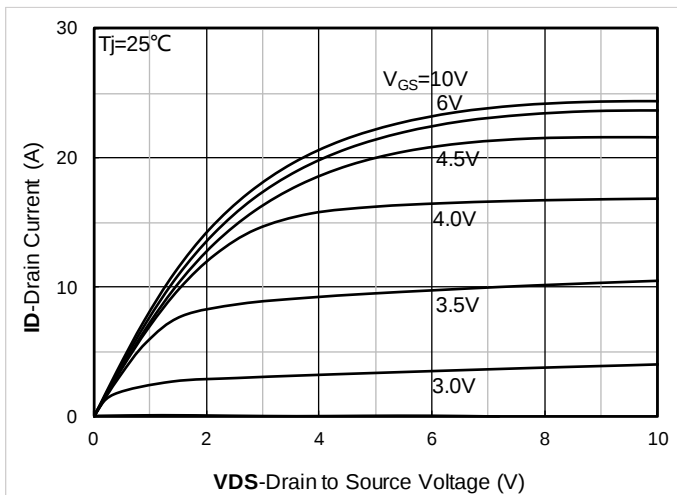


Figure 1. Output Characteristics; typical values

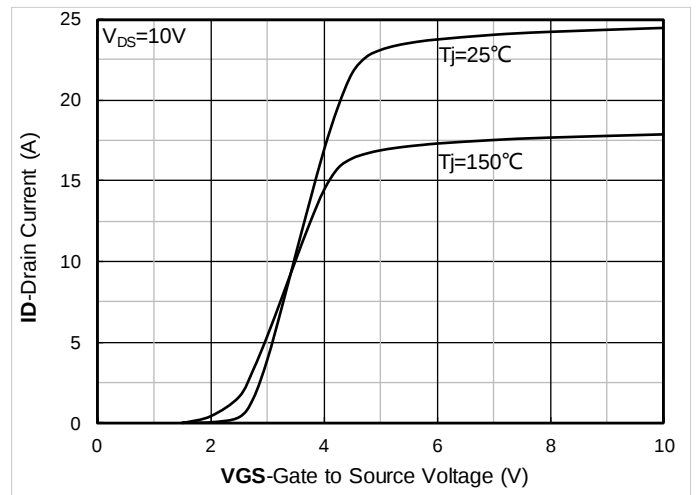


Figure 2. Transfer Characteristics; typical values

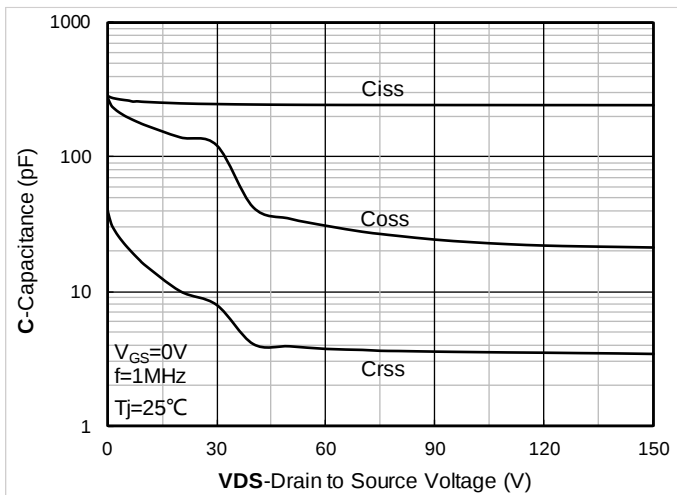


Figure 3. Capacitance Characteristics; typical values

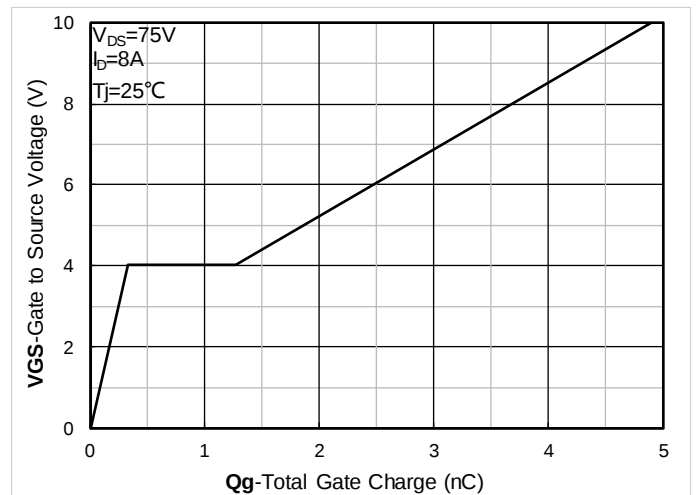


Figure 4. Gate Charge; typical values

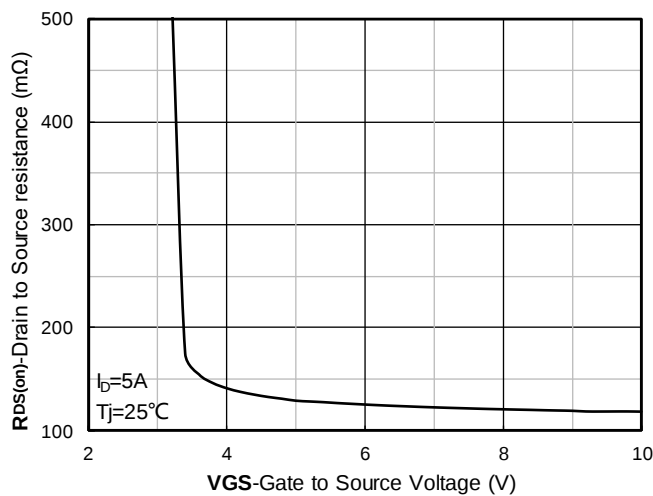


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

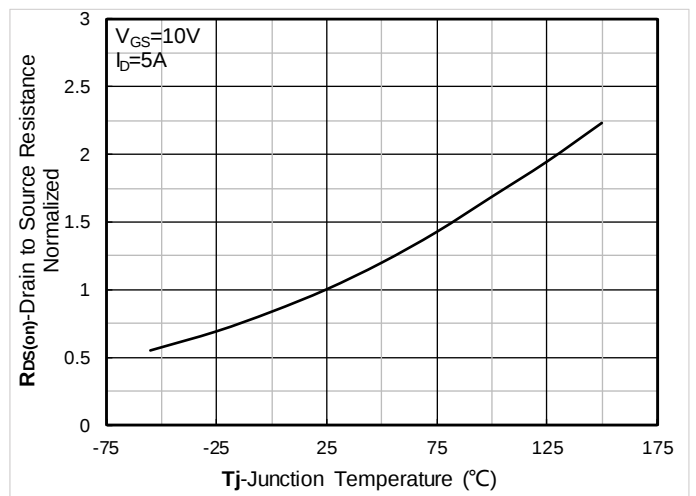


Figure 6. Normalized On-Resistance

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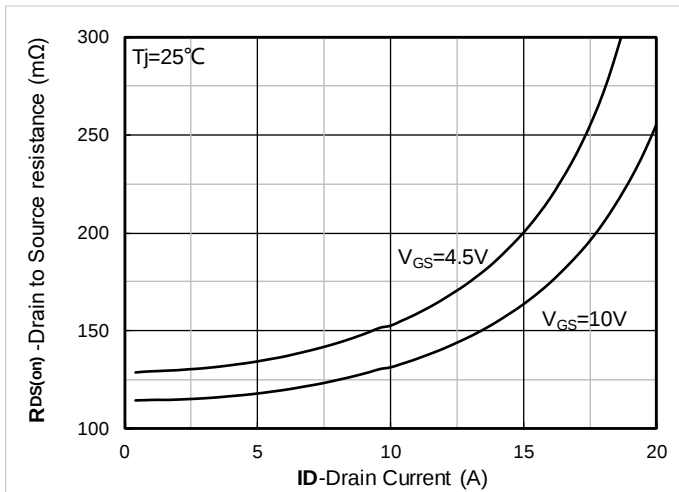


Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

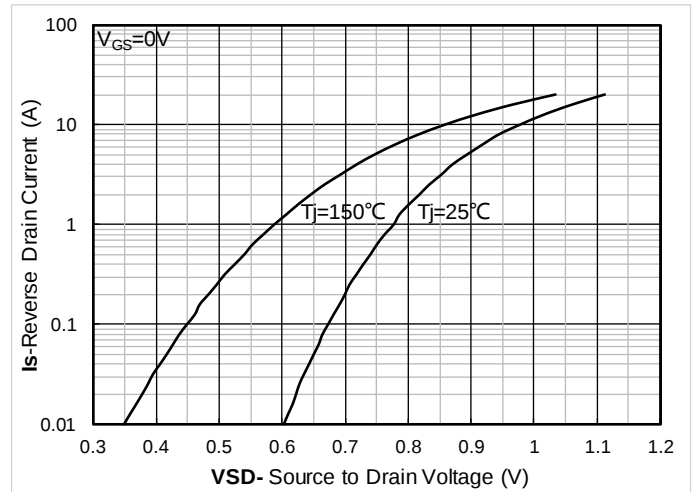


Figure 8. Forward characteristics of reverse diode; typical values

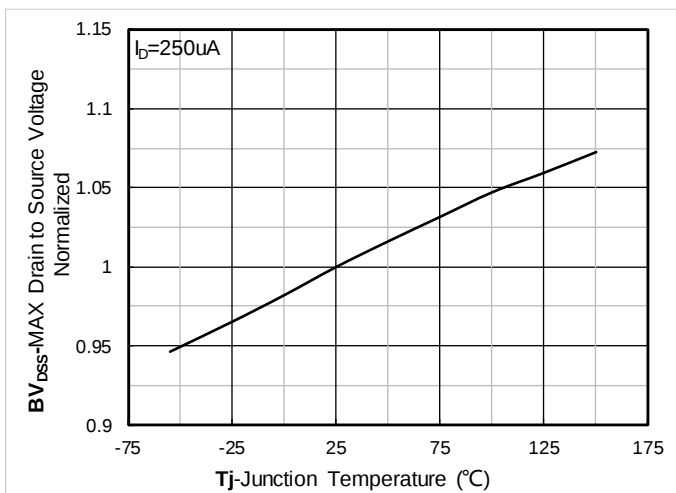


Figure 9. Normalized breakdown voltage

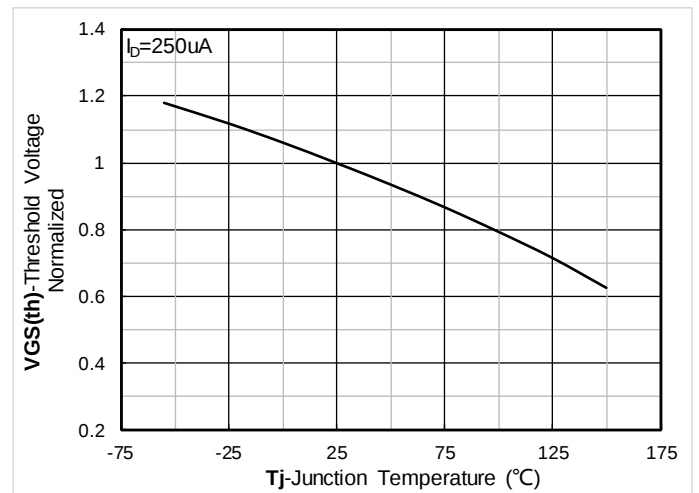


Figure 10. Normalized Threshold voltage

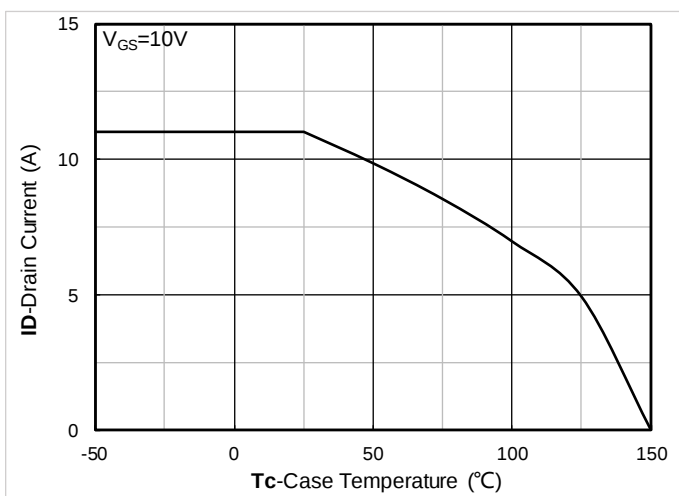


Figure 11. Current dissipation

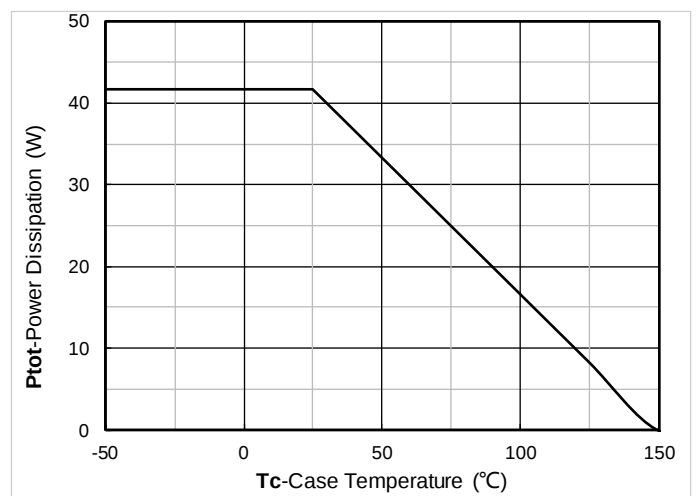


Figure 12. Power dissipation

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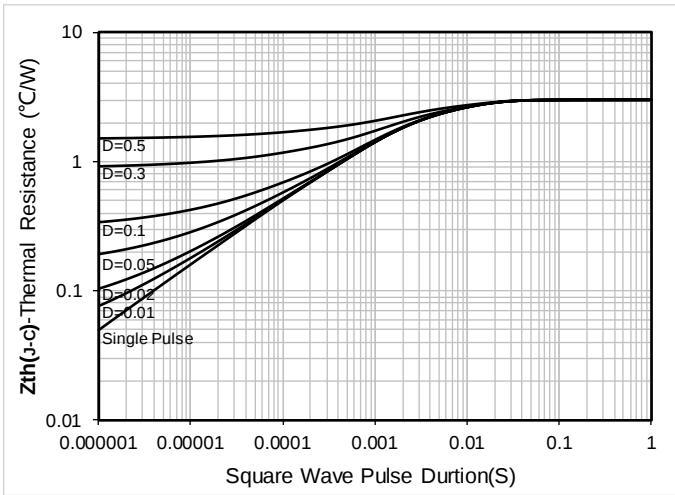


Figure 13. Maximum Transient Thermal Impedance

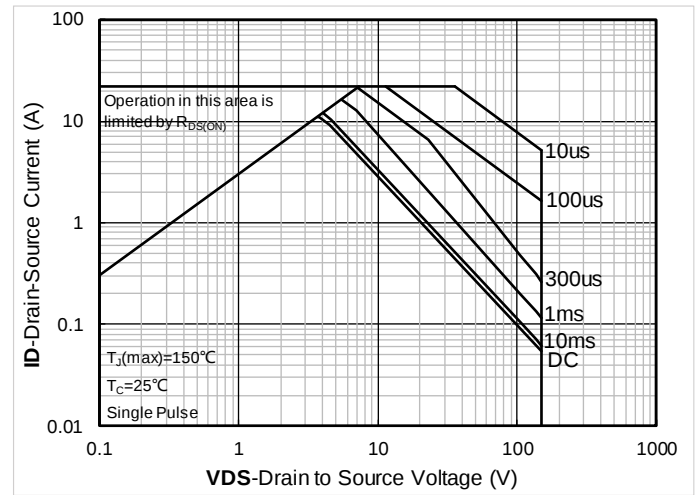
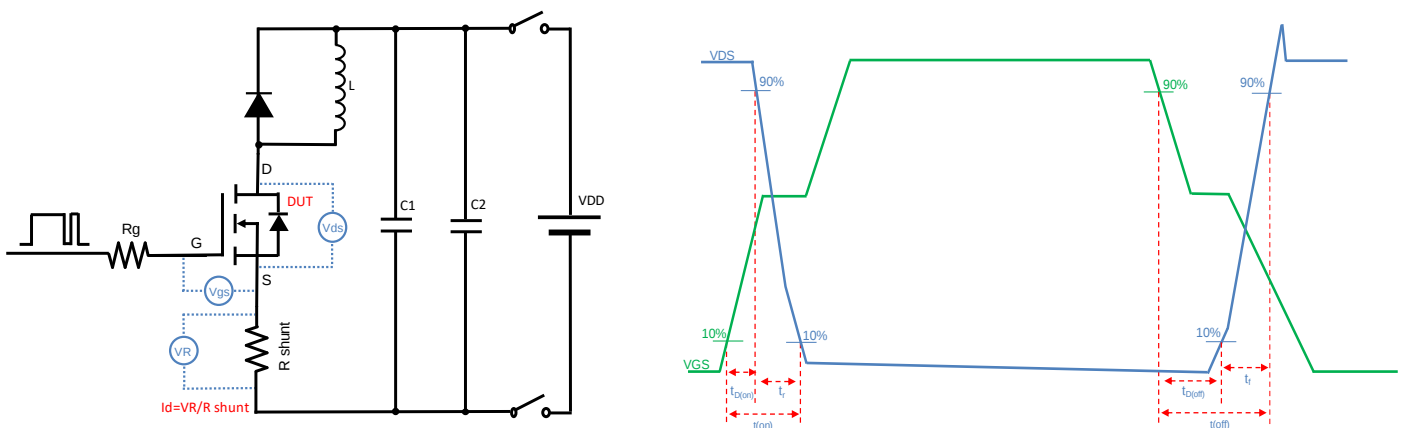
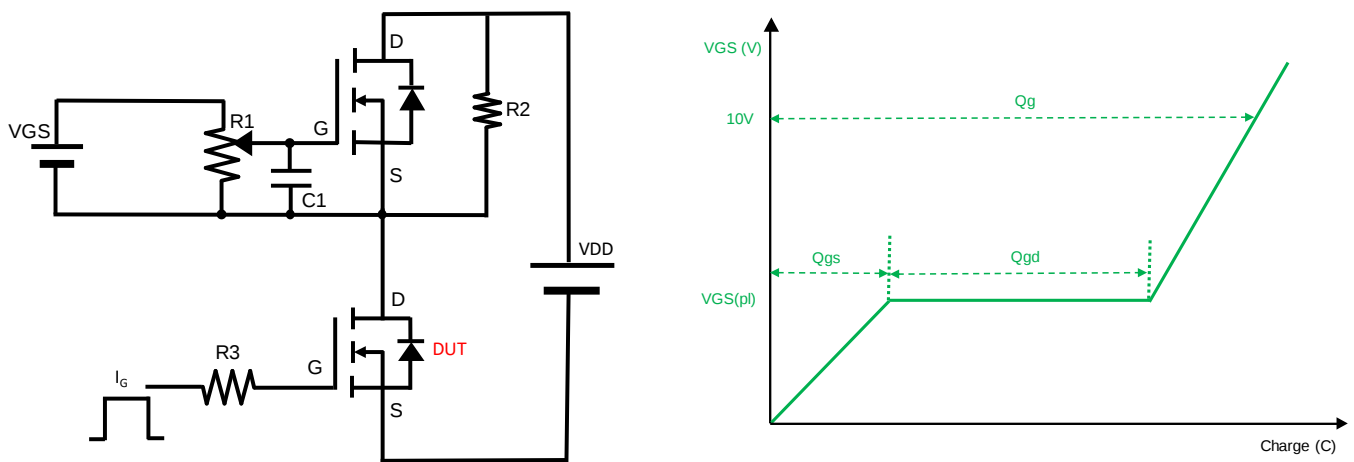
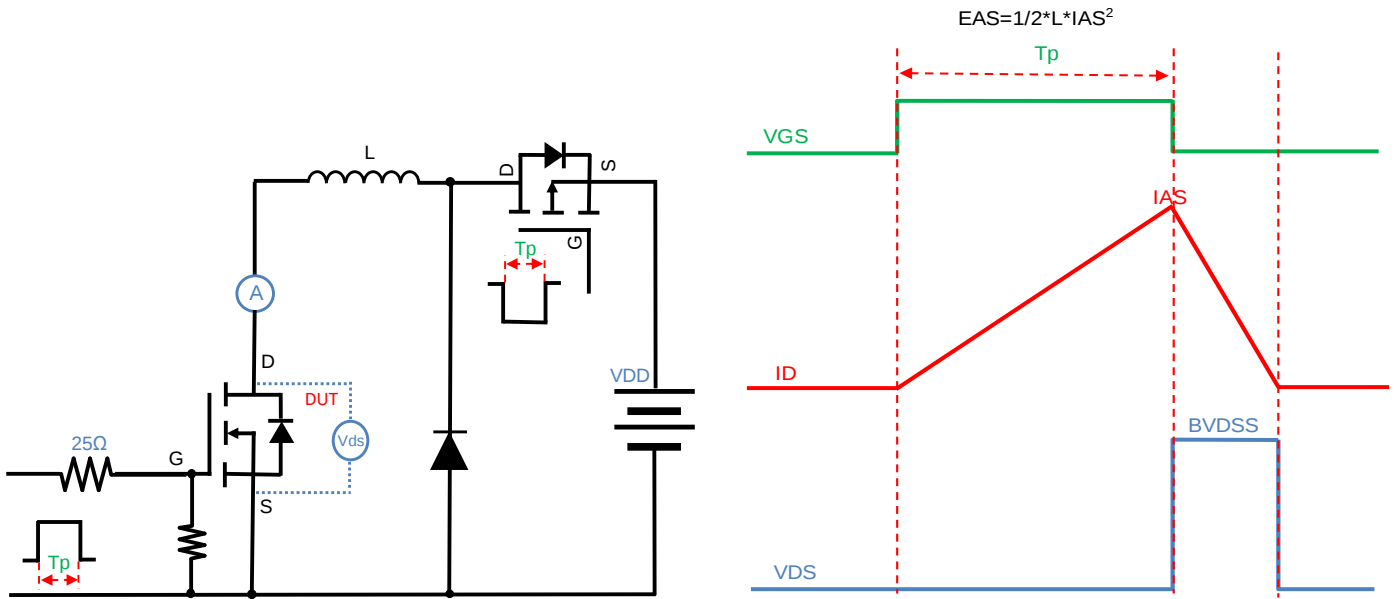


Figure 14. Safe Operation Area

■ Test Circuits & Waveforms



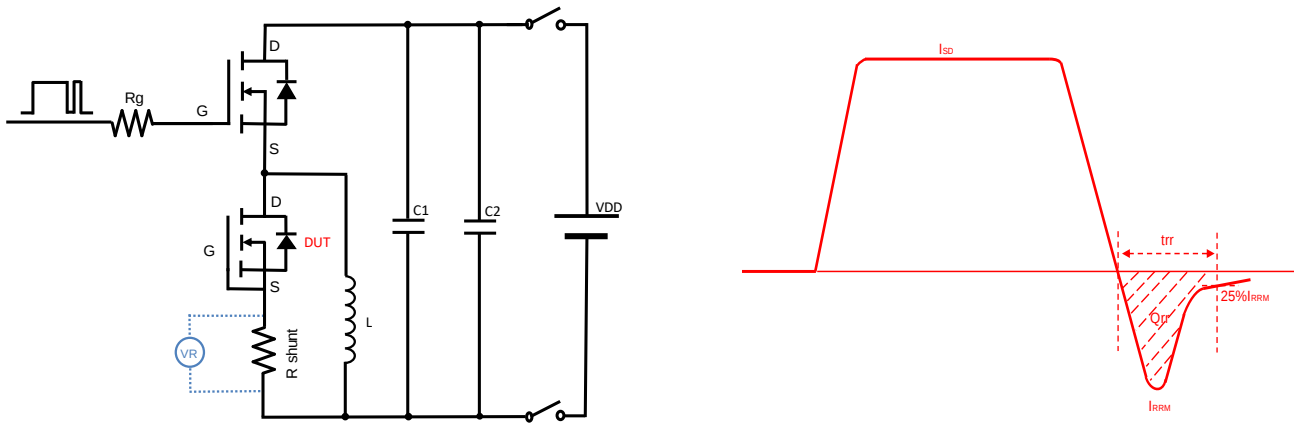
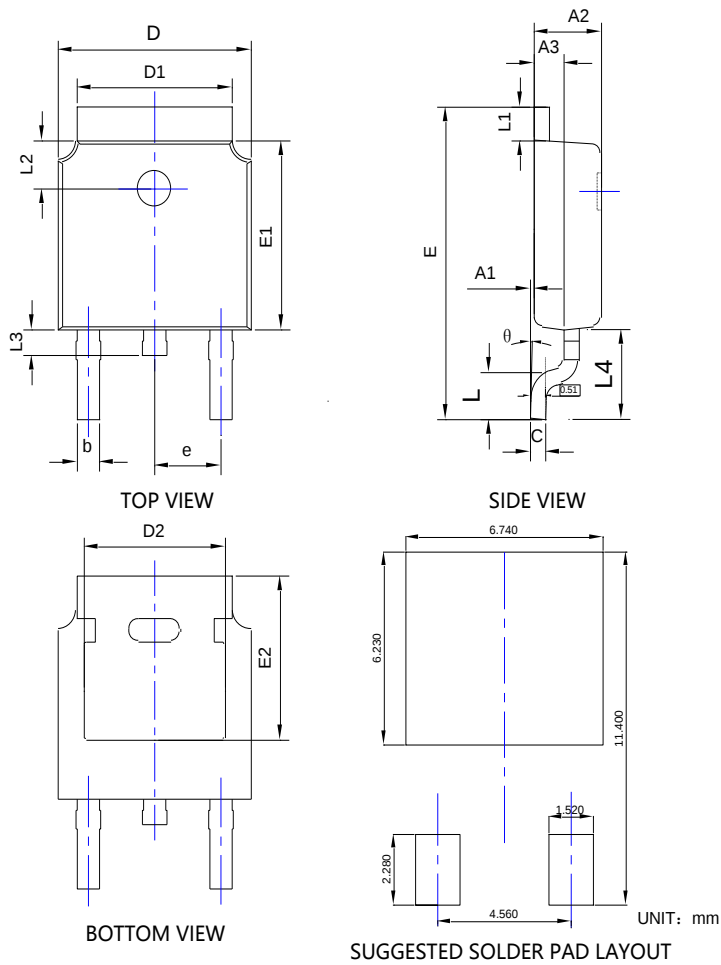


Figure D. Diode Recovery Test Circuit & Waveform

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■ TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.024	0.031	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

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