

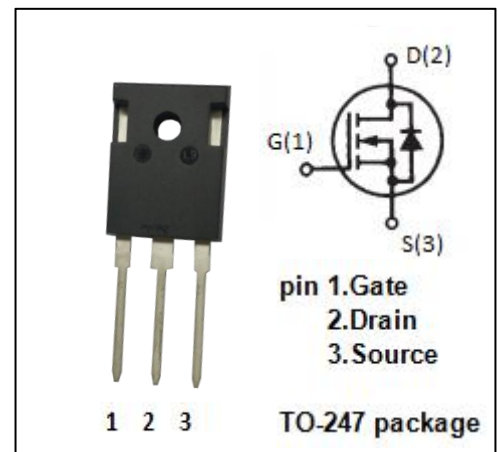
N-Channel MOSFET Transistor

FEATURES

- Drain Current $-I_D = 24A @ T_C = 25^\circ C$
- Drain Source Voltage $-V_{DSS} = 500V(\text{Min})$
- Static Drain-Source On-Resistance
 $-R_{DS(on)} = 300m\Omega (\text{Max}) @ V_{GS} = 10V$

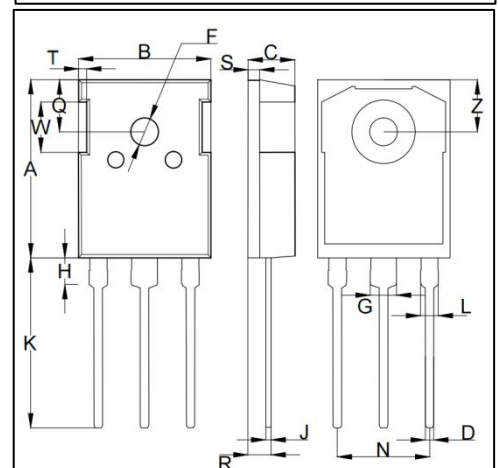
APPLICATIONS

- Current Regulators
- Solid State Circuit Breakers



Absolute Maximum Ratings($T_C = 25^\circ C$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{DSS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Drain Current-Continuous	24	A
I_{DM}	Drain Current-Single Pulse	50	A
P_D	Total Dissipation @ $T_C = 25^\circ C$	400	W
T_J	Max. Operating Junction Temperature	-55~150	$^\circ C$
T_{stg}	Storage Temperature	-55~150	$^\circ C$



DIM	mm		
	MIN	TYP.	MAX
A	19.80	20.65	21.50
B	15.40	15.65	15.90
C	4.70	5.00	5.30
D	0.90	1.08	1.26
F	3.50	3.70	3.90
G	2.70	3.00	3.30
H	3.90	4.05	4.20
J	0.50	0.60	0.70
K	19.50	20.00	20.50
L	1.90	2.05	2.20
N	10.80	10.90	11.00
Q	6.00	6.15	6.30
R	2.90	3.10	3.30
S	1.80	2.00	2.20
T	2.15	2.25	2.35
W	4.90	5.00	5.10
Z	6.00	6.15	6.30

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance, Junction to Case	0.31	$^\circ C/W$

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ELECTRICAL CHARACTERISTICS (T_C=25°C)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0, I _D = 0.25mA	500	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 500V, V _{GS} = 0	--	--	50	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 0.25mA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = 20V, I _D = 12A	--	--	300	mΩ
g _{FS}	Forward Transconductance	V _{DS} =25V, I _D =12A	--	32	--	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, f=1.0MHz	--	6072	--	pF
C _{oss}	Output Capacitance		--	632	--	
C _{rss}	Reverse Transfer Capacitance		--	109	--	
Q _g	Total Gate Charge	V _{DD} =250V, I _D =24A, V _{GS} =0 to 10V	--	153	--	nC
Q _{gs}	Gate-Source Charge		--	41	--	
Q _{gd}	Gate-Drain Charge		--	86	--	
t _{d(on)}	Turn-on Delay Time	V _{DD} =250V, I _D =12A, V _{GS} =10V R _G =25Ω	--	140	--	ns
t _r	Turn-on Rise Time		--	480	--	
t _{d(off)}	Turn-off Delay Time		--	190	--	
t _f	Turn-off Fall Time		--	162	--	

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DRAIN - SOURCE BODY DIODE CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
I_{SD}	Continuous Source Current	$T_C=25^\circ\text{C}$	--	--	24	A
V_{SD}	Diode Forward Voltage	$I_S=24\text{A}, V_{GS}=0\text{V}$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$V_{GS}=0\text{V}, I_F=25\text{A}, di_F/dt=100\text{A}/\mu\text{s}$	--	830	--	ns
Q_{rr}	Reverse Recovery Charge		--	0.95	--	μC

Typical Characteristics

Figure 1. Maximum Transient Thermal Impedance

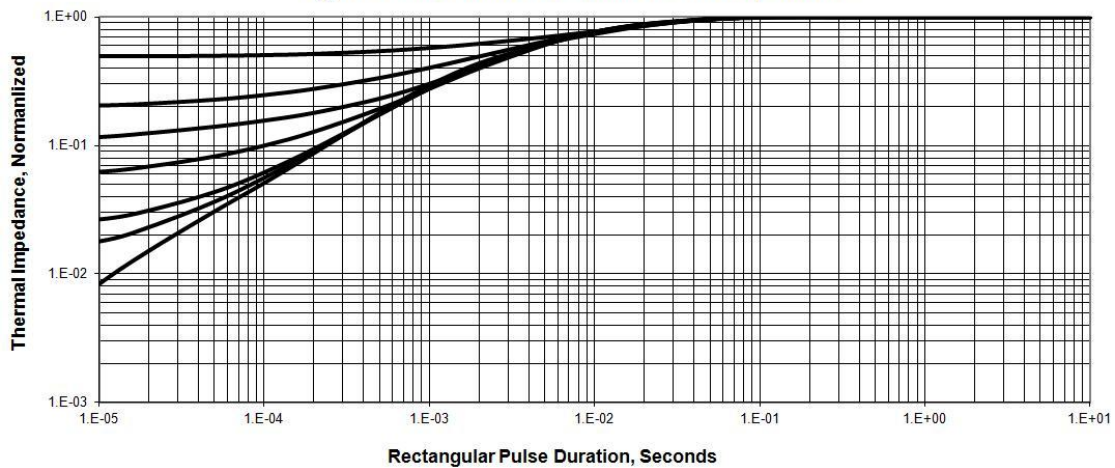


Figure 2 . Max. Power Dissipation vs Case Temperature

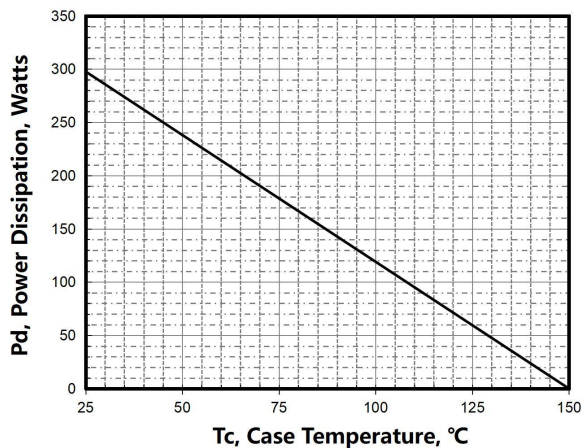
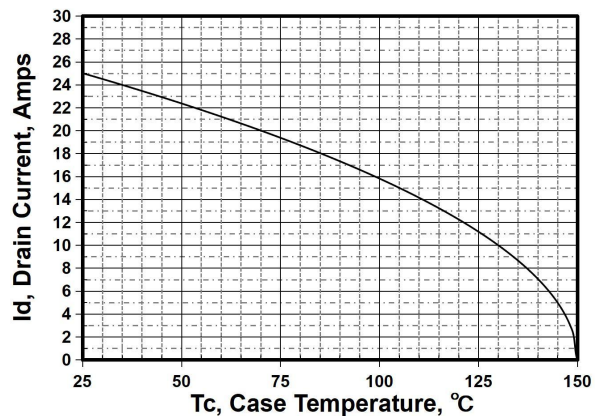


Figure 3 .Maximum Continuous Drain Current vs Tc



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Figure 4. Output Characteristics

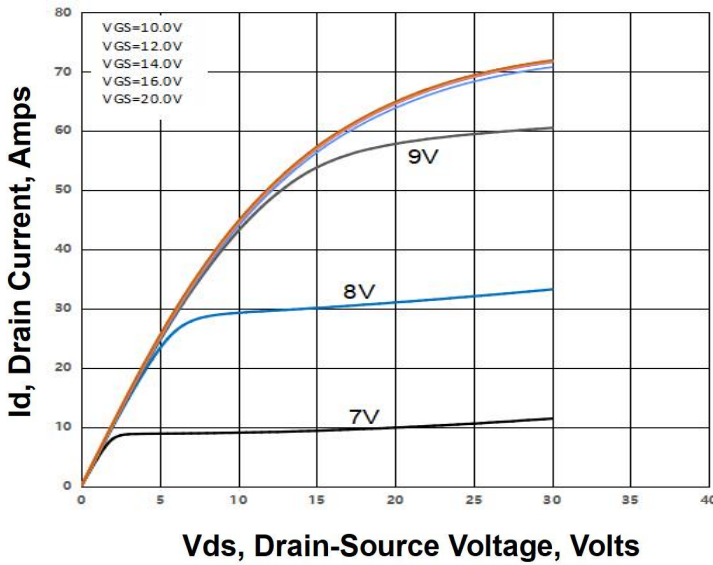


Figure 5. $R_{ds(on)}$ vs Gate Voltage

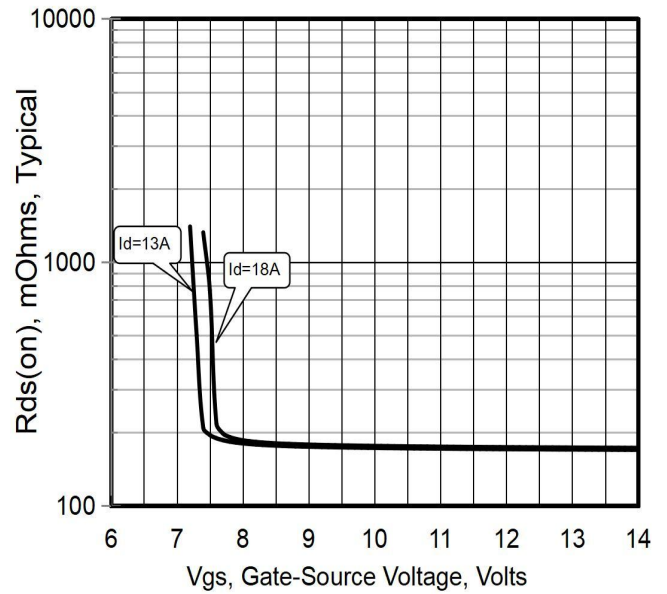
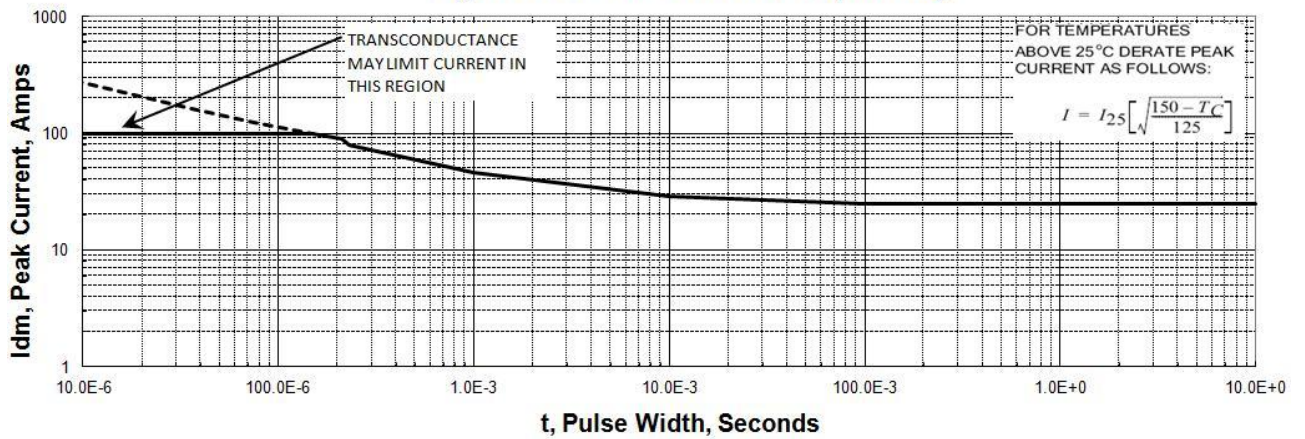


Figure 6. Peak Current Capability



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Figure 7. Transfer Characteristics

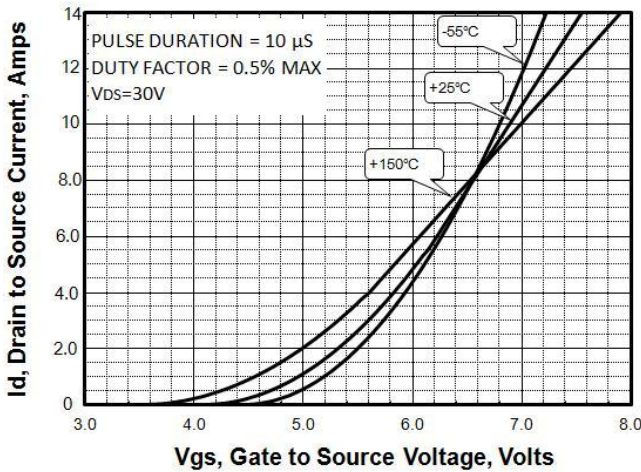


Figure 8. Unclamped Inductive Switching Capability

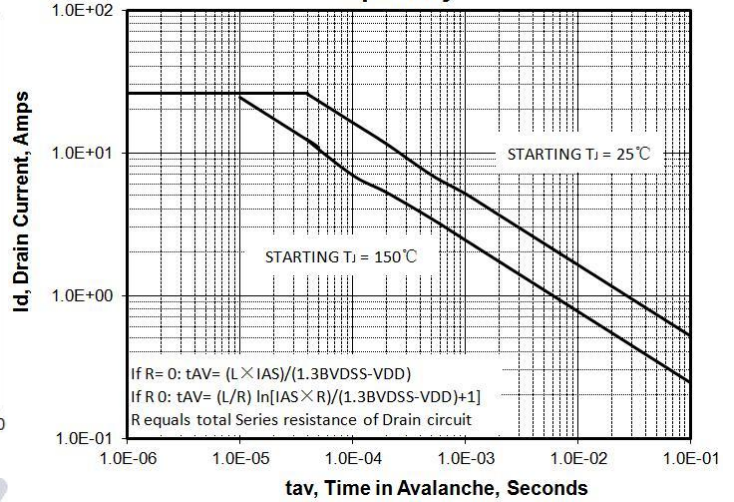


Figure 9. Drain to Source ON Resistance vs Drain Current

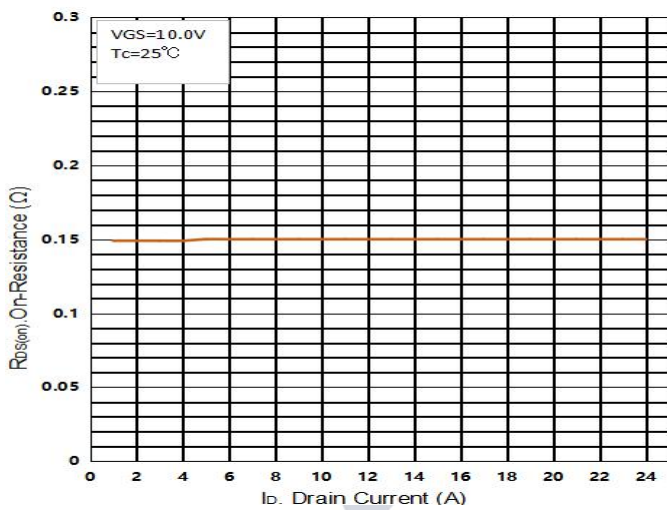


Figure 10. Rds(on) vs Junction Temperature

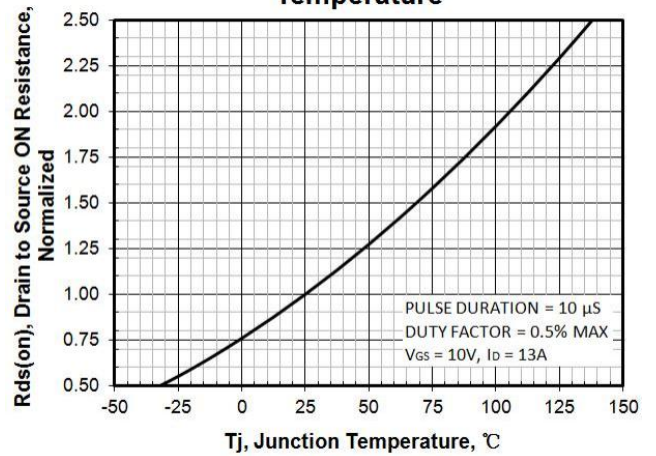


Figure 11. Breakdown Voltage vs Temperature

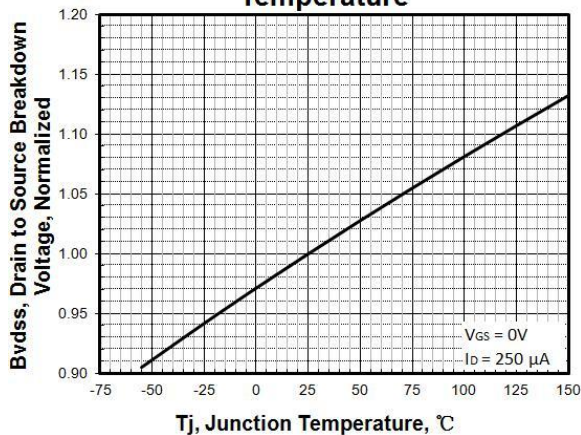
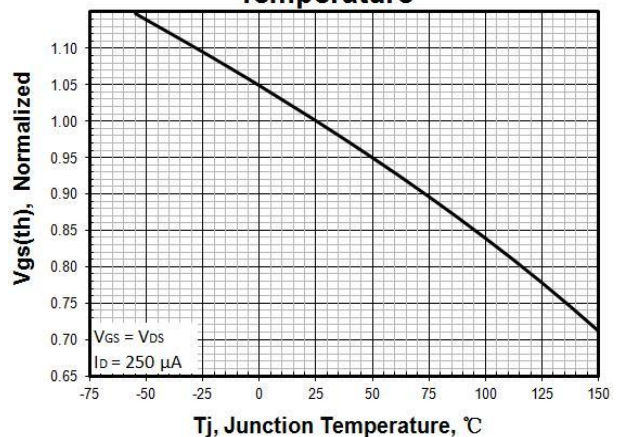


Figure 12. Threshold Voltage vs Temperature



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Figure 13 . Maximum Safe Operating Area

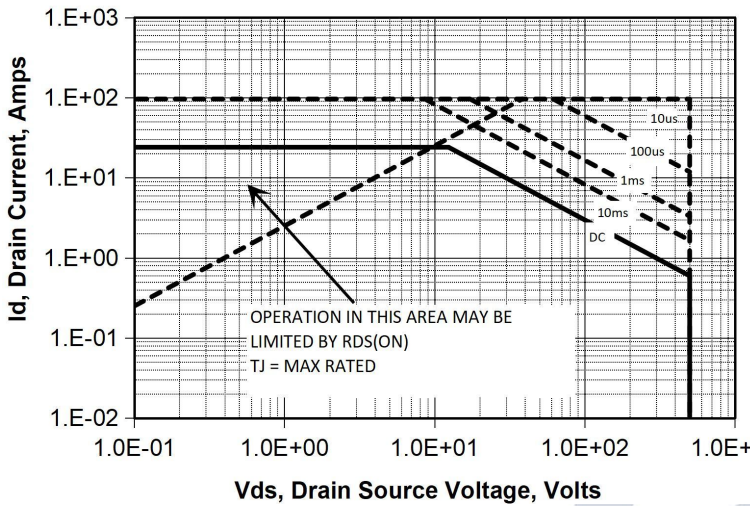


Figure 14. Capacitance vs V_{ds}

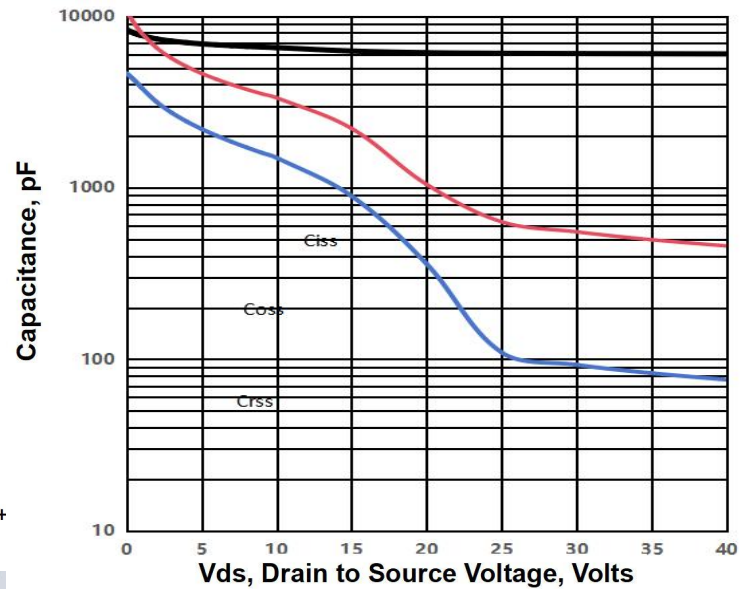


Figure 15 . Typical Gate Charge

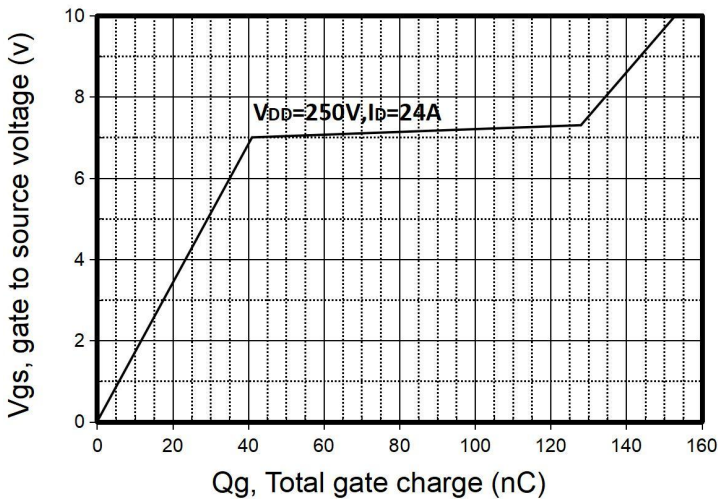
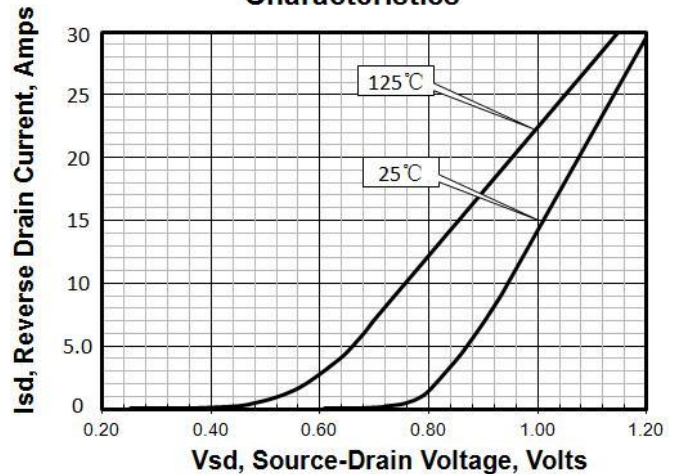


Figure 16. Body Diode Transfer Characteristics



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Test Circuit and Wave forms

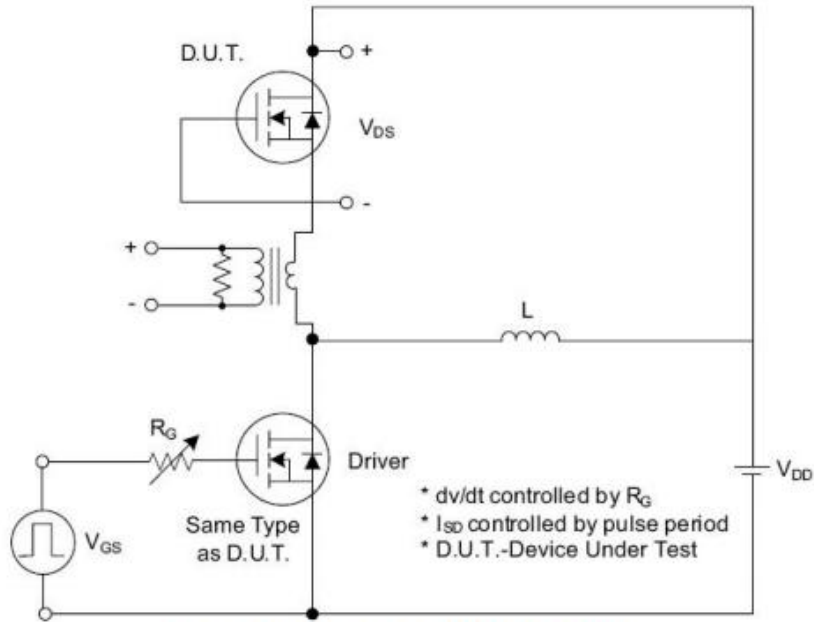


Fig. 1.1 Peak Diode Recovery dv/dt Test Circuit

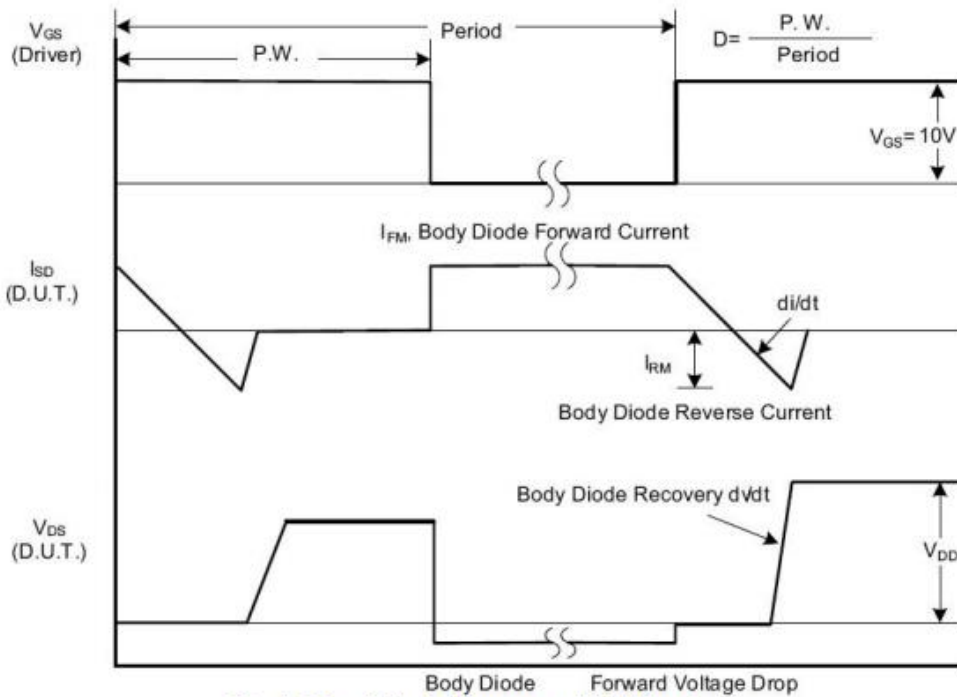


Fig. 1.2 Peak Diode Recovery dv/dt Waveforms

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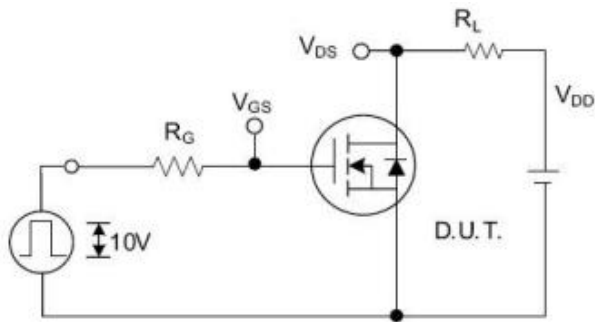


Fig. 2.1 Switching Test Circuit

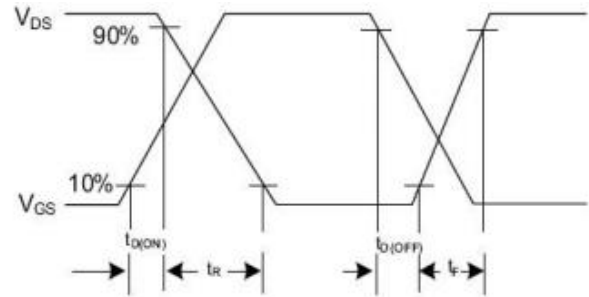


Fig. 2.2 Switching Waveforms

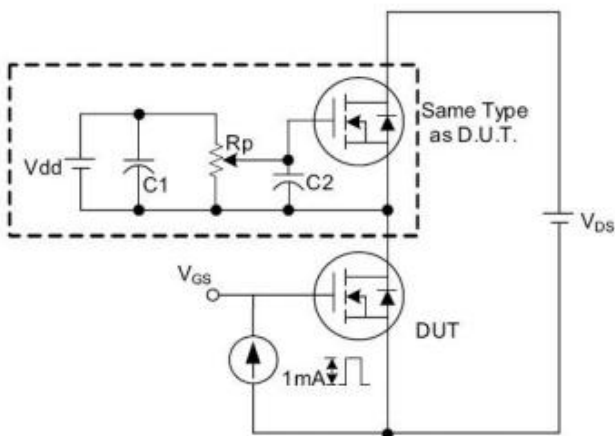


Fig. 3.1 Gate Charge Test Circuit

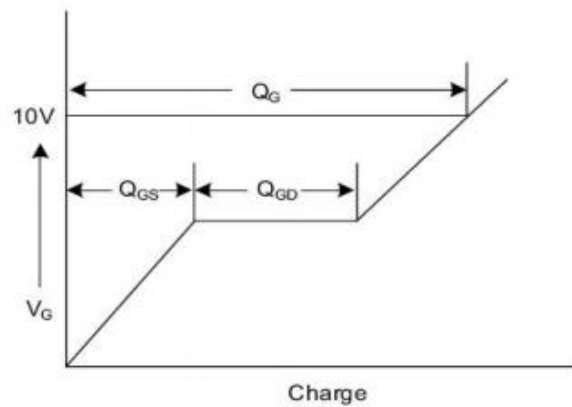
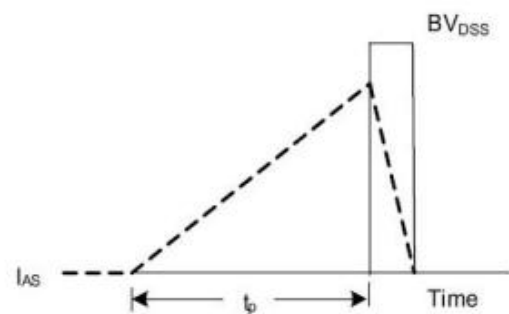
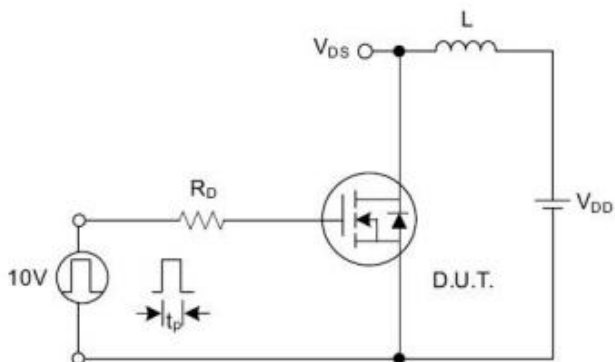


Fig. 3.2 Gate Charge Waveform



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