Features

- Low gate charge
- Low Ciss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS 2.0 Compliant

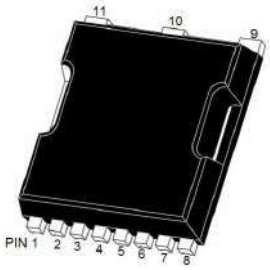
Product Summary

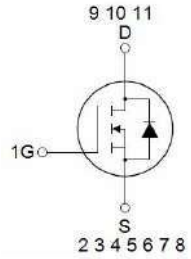
V_{DS}	40	V
$R_{DS(on),Typ}$@ V_{GS}=10 V	0.8	mΩ
I_D	300	A

Application

- High Frequency Switching
- Synchronous Rectification

TOLL





Absolute Maximum Ratings(T_C=25℃,unless otherwise noted)

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Voltage	V_{DSS}	-	-	40	V	-
Gate-Source Voltage	V_{GS}	-20	-	20	V	-
Continuous Drain Current(Package Limited)	I_D	-	-	300	A	T_C=25℃
		-	-	150	A	T_C=25℃ package limit
		-	-	130	A	T_C=100℃
Pulsed Drain Current(Note1)	I_{DM}	-	-	1200	A	-
Single Pulse Avalanche Energy	E_{AS}	-	-	287	mJ	L=9.8μH,V_D=32V, T_C=25℃,IAS=150A,Rg=25Ω
Maximum Power Dissipation	P_D	-	-	192	W	T_C=25℃
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55	-	150	℃	-
Maximum lead temperature for soldering purposes, 1/8"from case for 5 seconds	T_L	-	-	260	℃	-

Thermal Characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Thermal resistance , Junction-to- Case	$R_{\theta JC}$	-	-	0.65	℃/W	
Thermal resistance , Junction-to-Ambient	$R_{\theta JA}$	-	-	18		

Electrical Characteristics (T_C=25℃,unless otherwise noted) Static characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Drain-Source Breakdown Voltage	BV_{DSS}	40	-	-	V	V_{GS}=0V,I_D=250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=40V,V_{GS}=0V
Gate-Body Leakage Current,Forward	I_{GSSF}	-	-	100	nA	V_{GS}=20V,V_{DS}=0V
Gate-Body Leakage Current,Reverse	I_{GSSR}	-	-	-100	nA	V_{GS}=-20V,V_{DS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	2.0	-	4.0	V	V_{DS}=V_{GS},I_D=1mA
Drain-Source On-State Resistance	$R_{DS(on)}$	-	0.8	1.0	mΩ	V_{GS}=10V,I_D=75A
Gate Resistance	R_g	-	2.5	-	Ω	V_{GS}=0V, V_{DS} Open, f=1MHz

Dynamic characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Input Capacitance	C_{iss}	-	6450	-	pF	V_{DS}=10V,V_{GS}=0V,f=300kHZ
Output Capacitance	C_{oss}	-	3610	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	330	-	pF	
Turn-On Delay Time	$t_{d(on)}$	-	19	-	ns	V_{DD}=17.5V,R_G=5Ω, V_{GS}=10V,R_L=0.235Ω
Turn-On Rise Time	t_r	-	26	-	ns	
Turn-Off Delay Time	$t_{d(off)}$	-	85	-	ns	
Turn-Off Fall Time	t_f	-	45	-	ns	

Gate charge characteristics

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Total Gate Charge	Q_g	-	120	-	nC	V_{DS}=32V,I_D=150A,V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	39	-	nC	
Gate-Drain Charge	Q_{gd}	-	26	-	nC	
Gate plateau voltage	$V_{plateau}$	-	4.9	-	V	

Reverse diode

Parameter	Symbol	Values			Unit	Note/Test Conditions
		Min	Typ	Max		
Continuous Diode Forward Current	I_S	-	-	150	A	-
Pulsed Diode Forward Current	I_{SM}	-	-	450	A	-
Diode Forward Voltage	V_{SD}	-	-	1.2	V	I_S=20A,V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	141	-	ns	V_D=35V,I_F=10A
Reverse Recovery Charge	Q_{rr}	-	333	-	nC	di/dt=100A/μs,(Note2)

Notes

1. Repetitive Rating:pulse width limited by maximum junction temperature.
2. Pulse width≤300us,duty cycle≤2%.
3. A maximum of the zth(ch-tp) measured at Pingwei's test environment is only used for reference.
   Be aware that the top-plate has the same electric potential as the sources; however, not intended for an Electrode.

RATING AND CHARACTERISTIC CURVES

Figure.1 Typical Output Characteristics

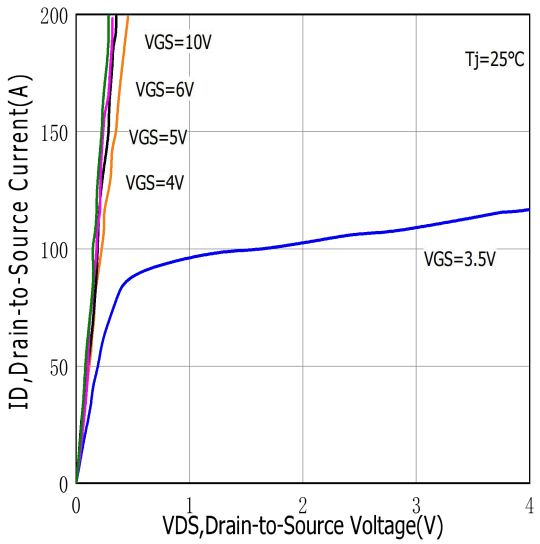


Figure.2 Typical Gate Charge vs Gate to Source Voltage

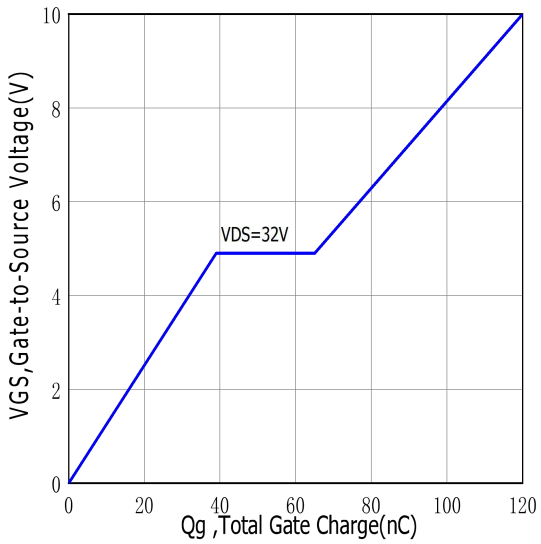


Figure.3 Typical Body Diode Transfer Characteristics

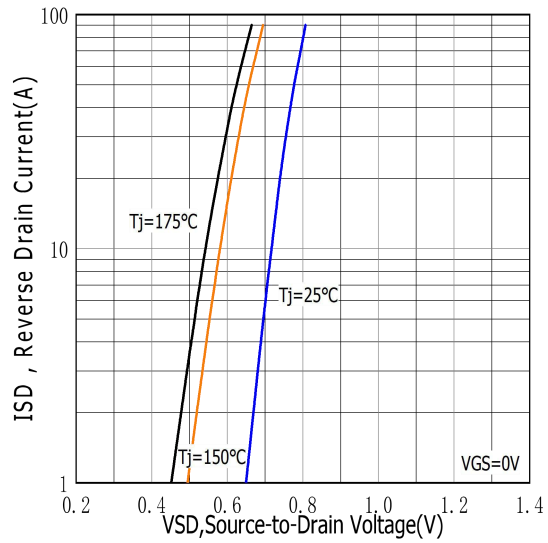


Figure.4 Typical Capacitance vs Drain to Source Voltage

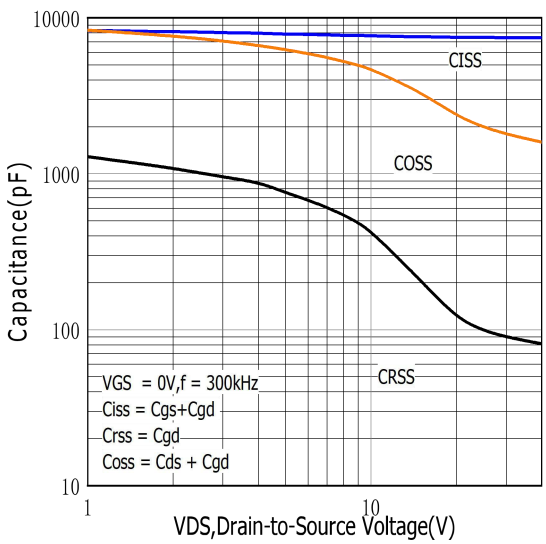


Figure.5 Typical Breakdown Voltage vs Junction Temperature

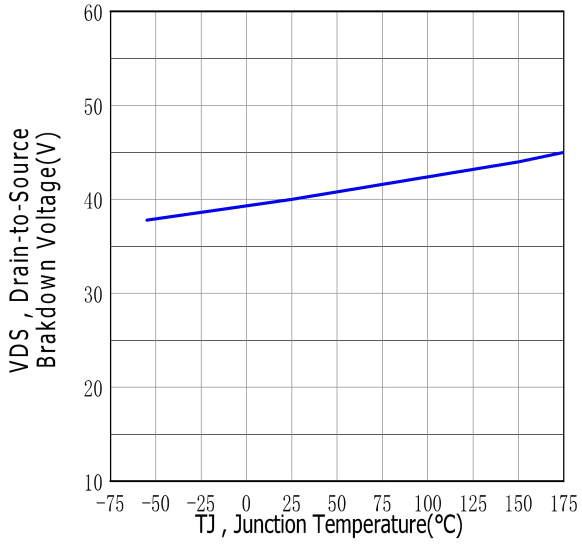


Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

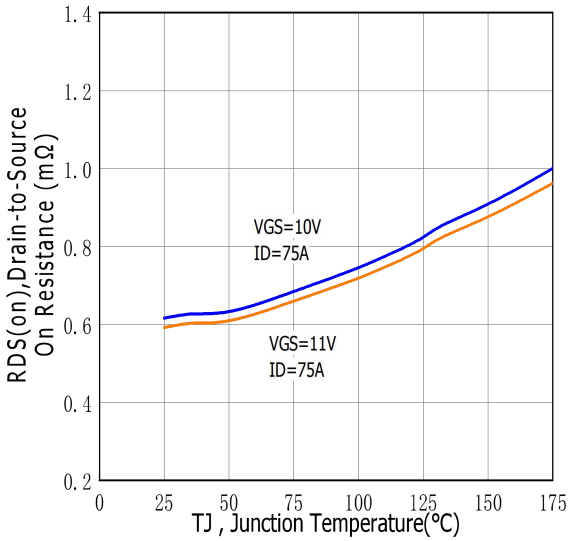


Figure.7 Maximum Forward Bias Safe Operating Area

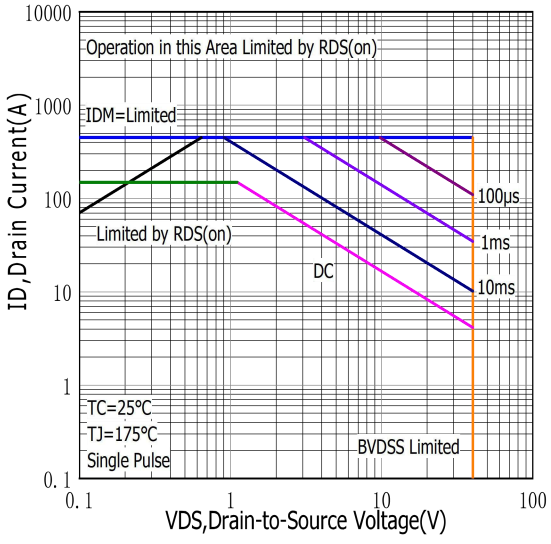


Figure.8 Typical Drain to Source ON Resistance vs Drain Current

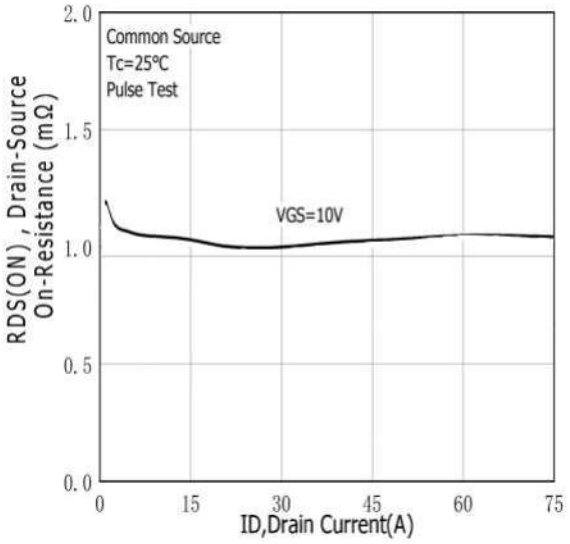


Figure.9 Maximum EAS vs Channel Temperature

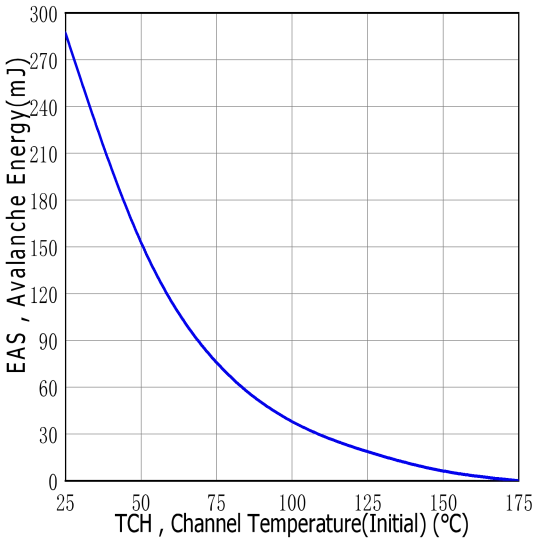


Figure.10 Typical Threshold Voltage vs Case Temperature

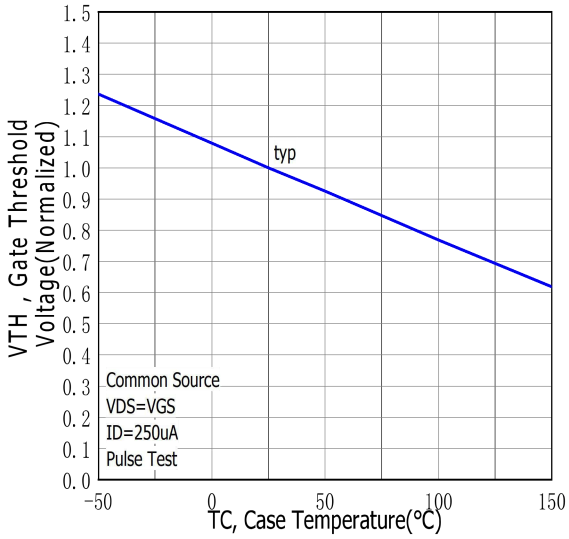


Figure.11 Typical Transfer Characteristics

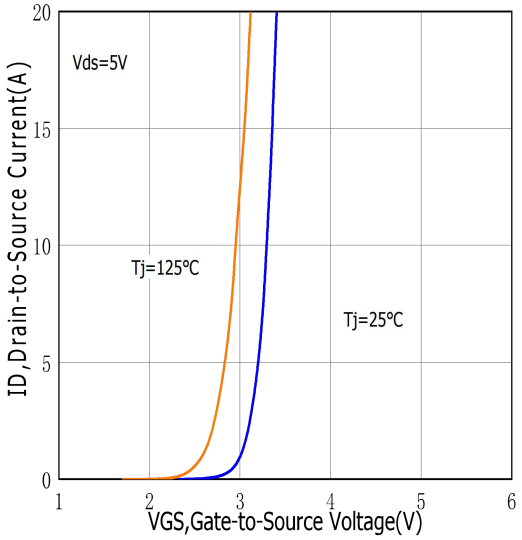


Figure.12 Maximum Power Dissipation vs Case Temperature

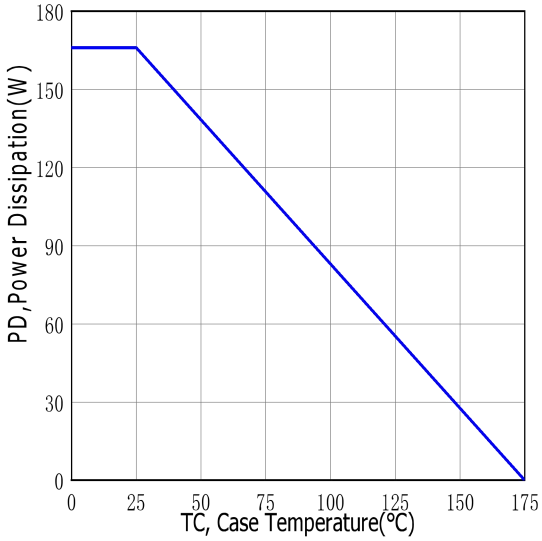


Figure.13 Maximum Drain Current vs. Case Temperature

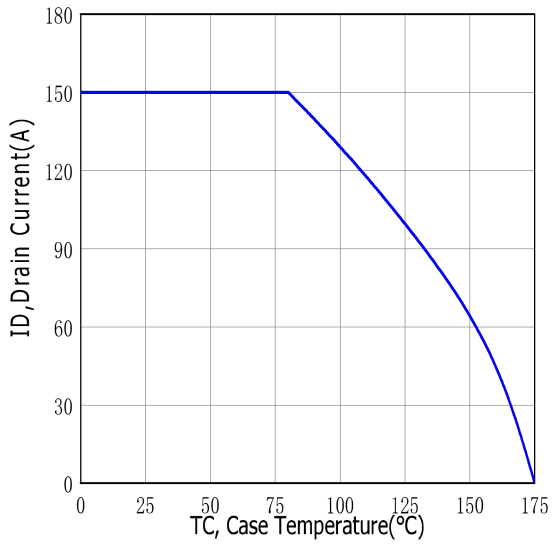


Figure.14 Maximum Effective Thermal Impedance , Junction to Case

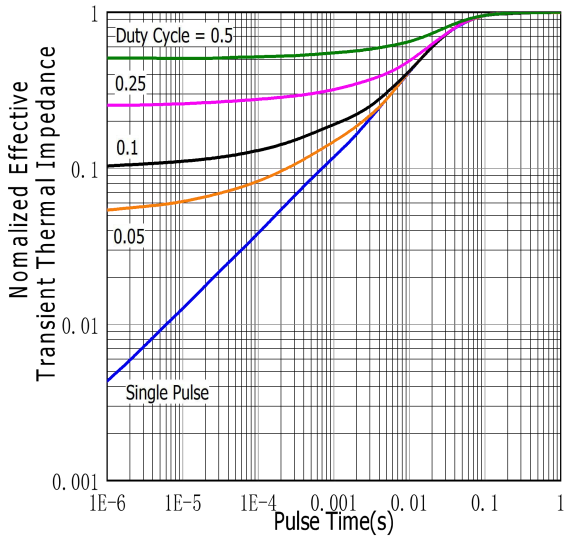


Figure.15 Typical Body Diode Transfer Characteristics

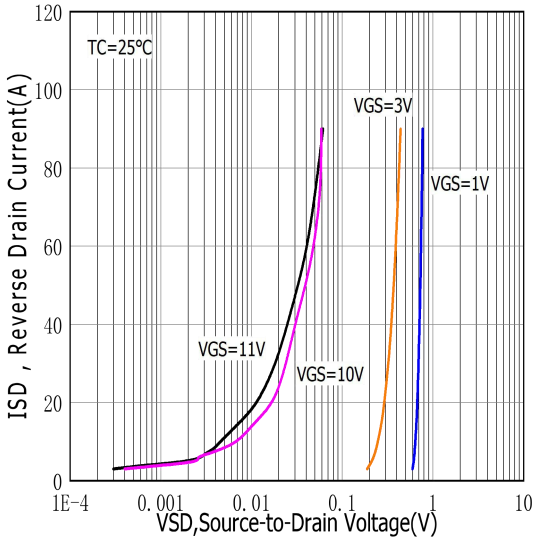
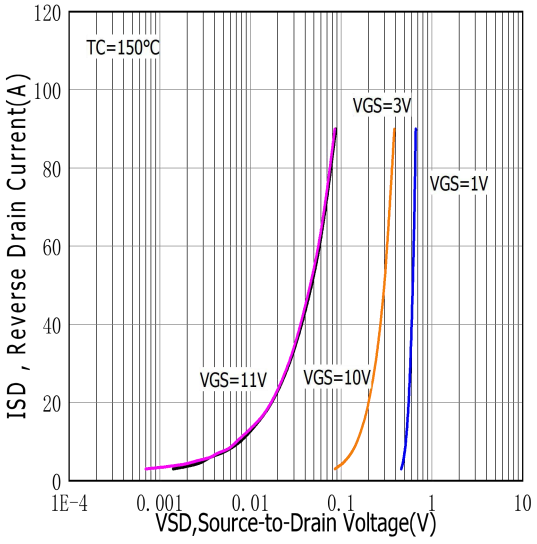
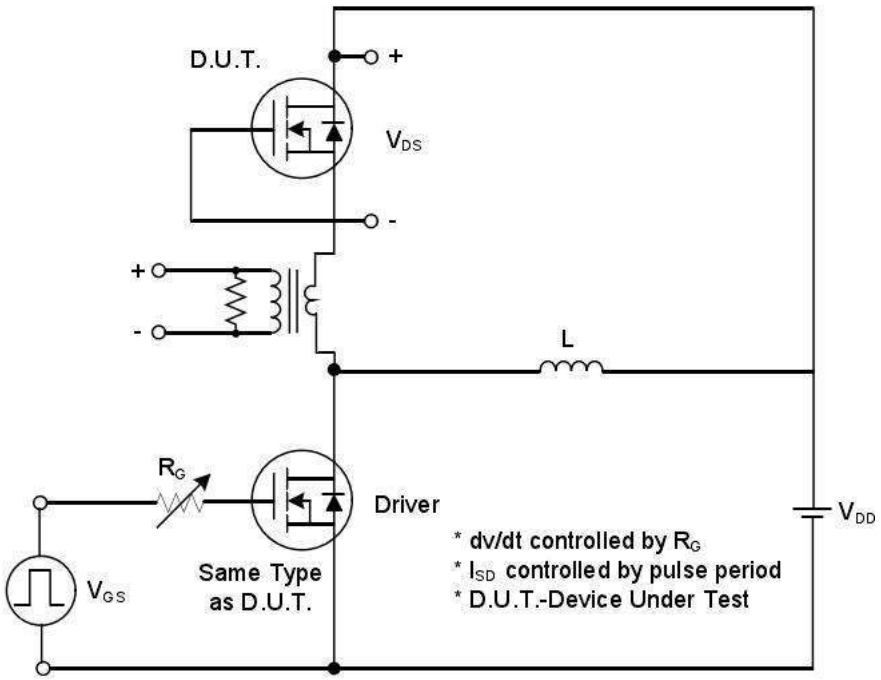


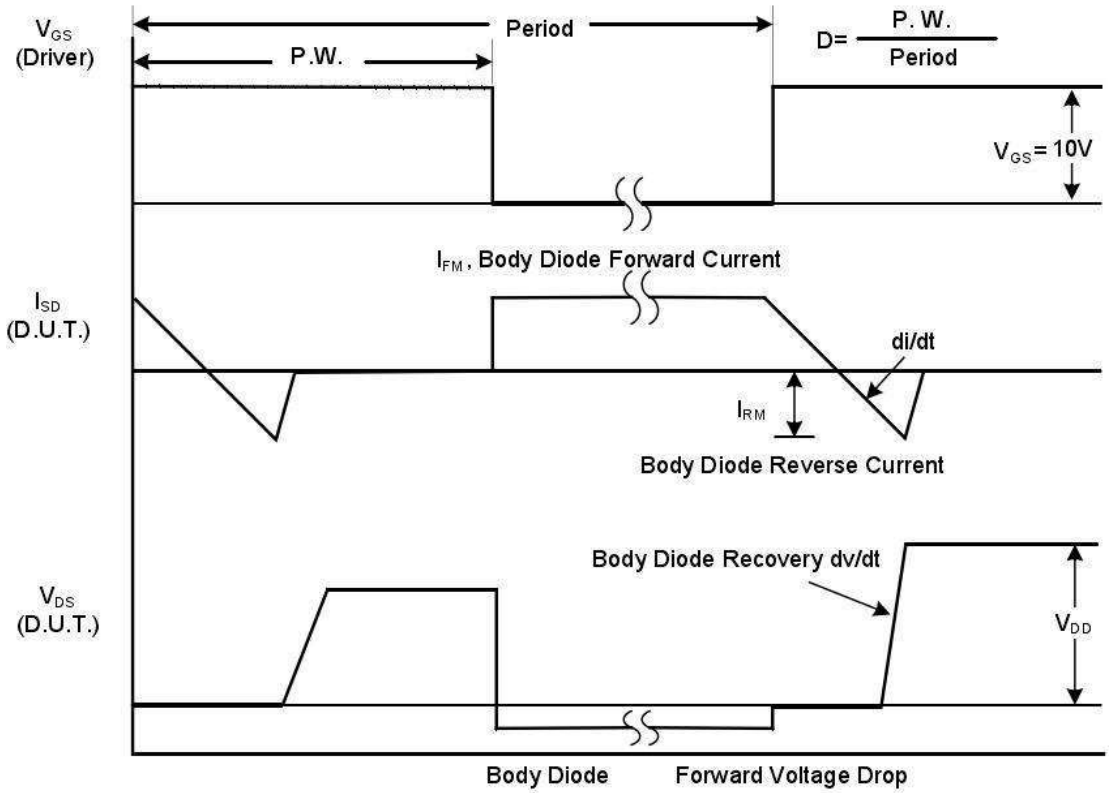
Figure.16 Typical Body Diode Transfer Characteristics



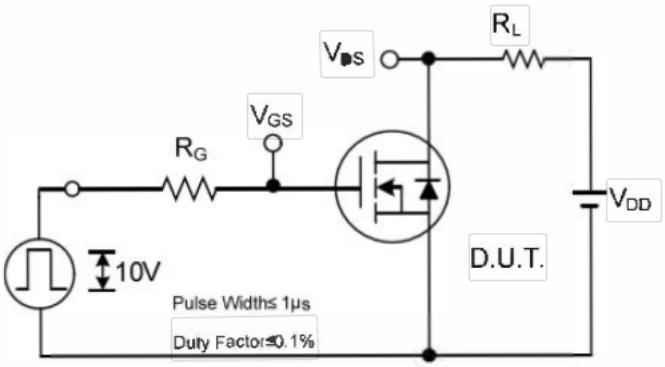
RATING AND CHARACTERISTIC CURVES

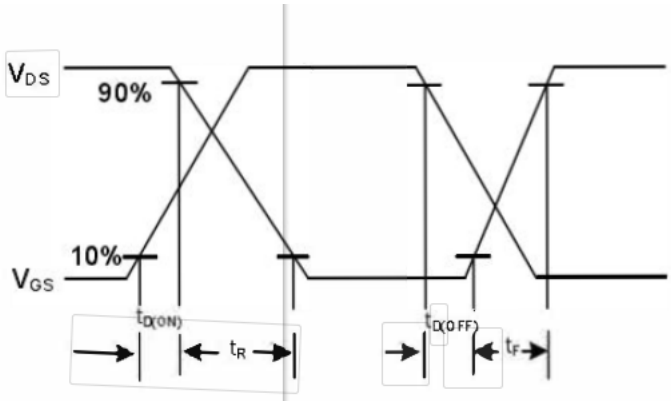


Peak Diode Recovery dv/dt Test Circuit

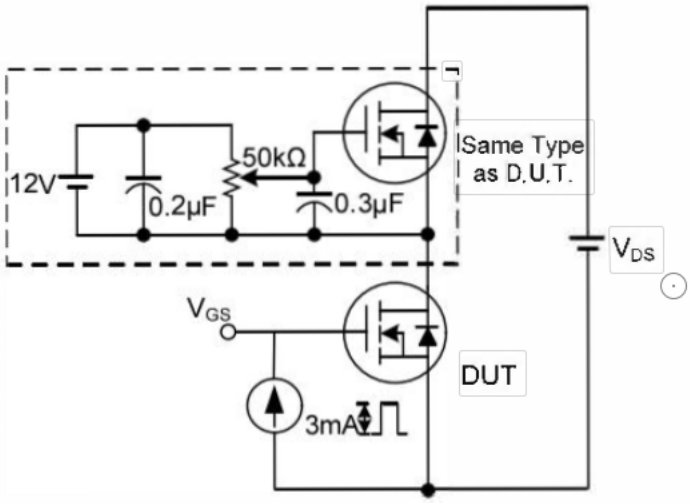


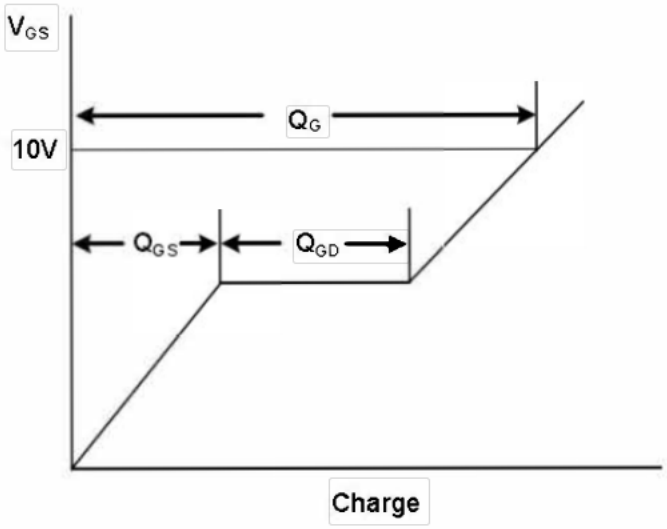
Peak Diode Recovery dv/dt Waveforms



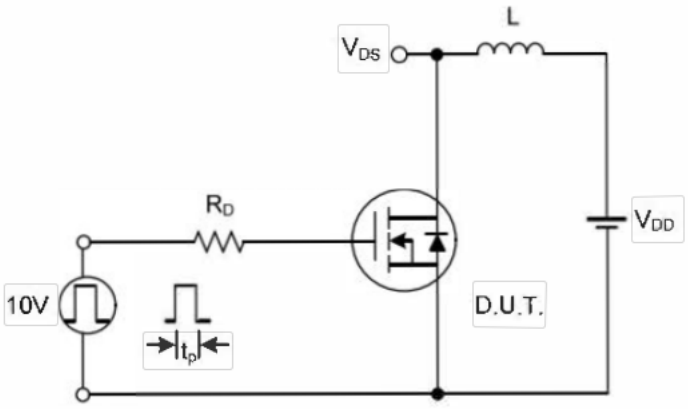


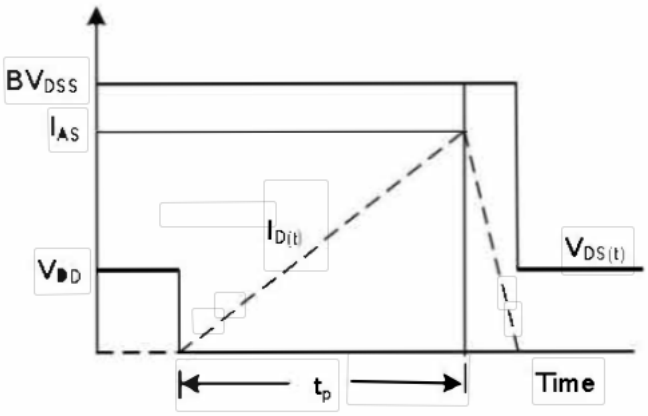
Switching Test Circuit **Switching Waveforms**





Gate Charge Test Circuit **Gate Charge Waveform**

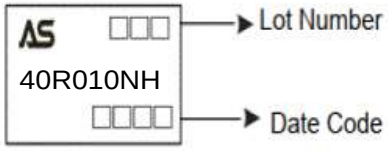




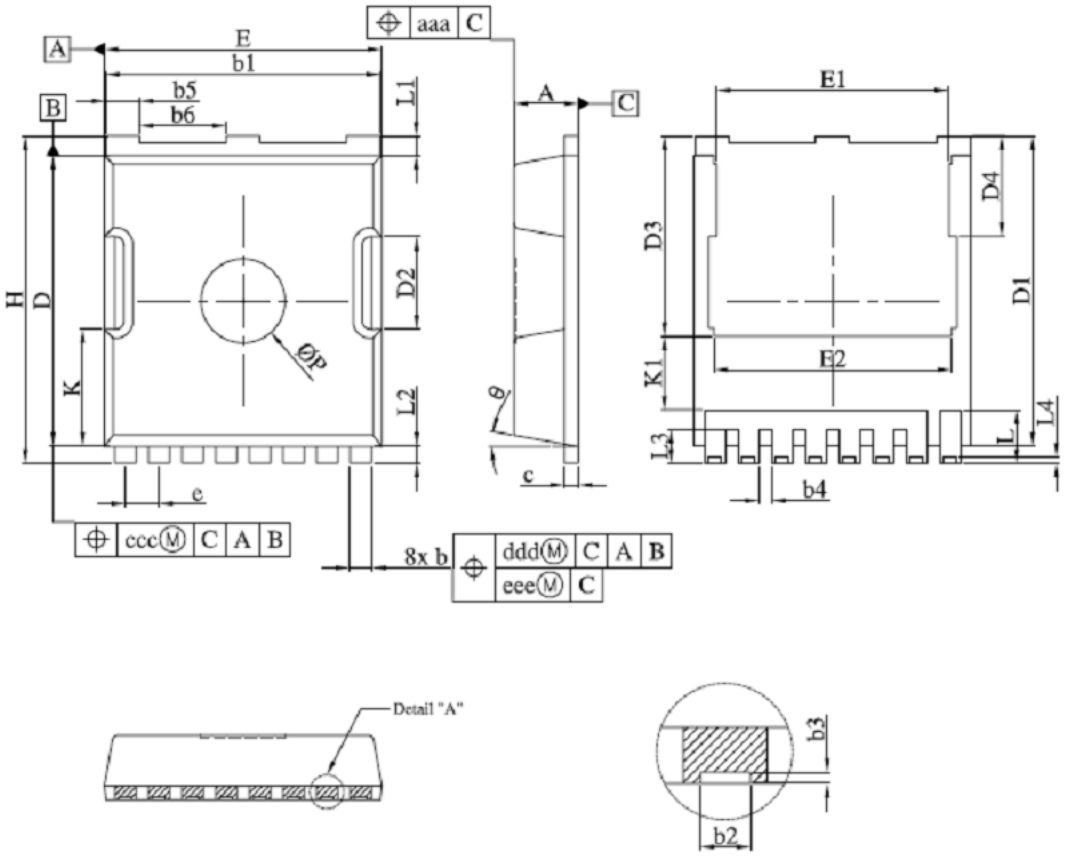
Unclamped Inductive Switching Test Circuit **Unclamped Inductive Switching Waveforms**

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40R010NHT-R	40R010NH	TOLL	Tape&Reel	2000/Reel

PACKAGE	MARKING
TOLL	

TOLL



SYMBOL	COMMON MILLIMETER		
	MIN.	NOMINAL	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.36	0.45	0.55
b3	0.05	0.100	0.35
b4	0.30	0.40	0.50
b5	1.10	1.20	1.30
b6	3.00	3.10	3.20
c	0.40	0.50	0.60
D	10.28	10.38	10.55
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D3	7.00	7.15	7.30
D4	3.44	3.59	3.74
e	1.10	1.20	1.30
E	9.80	9.90	10.00
E1	8.20	8.30	8.40
E2	8.35	8.50	8.65
H	11.50	11.68	11.85
K	4.08	4.18	4.28
K1	2.45	—	—
L	1.60	1.90	2.10
L1	0.50	0.70	0.90
L2	0.50	0.60	0.70
L3	1.00	1.20	1.30
L4	0.13	0.23	0.33
P	2.85	3.00	3.15
θ	10° REF		
aaa	0.20		
ccc	0.20		
ddd	0.25		
eee	0.20		

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