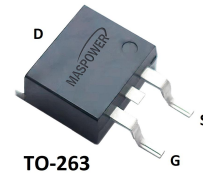


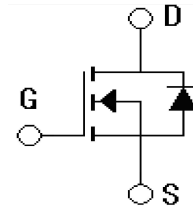
Features

- Low gate charge (typ. $Q_g=46\text{nC}$)
- Ultra fast switching
- 100% avalanche tested
- RoHS Compliant



Applications

- Power factor correction (PFC).
- Switched mode power supplies (SMPS).
- Uninterrupted Power Supply (UPS).
- Low Power chargers and Adapters



Absolute Ratings ($T_c=25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	800	V
Drain Current -continuous	I_D	24	A
Drain Current - pulse (note 1)	I_{DM}	96	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy (note 2)	E_{AS}	690	mJ
Power Dissipation	PD TC=25°C -Derate above 25°C	208	W
		1.67	W/°C
Operating and Storage Temperature Range	T_j, T_{STG}	-55~+150	°C
Continuous diode forward current	I_S	24	A
Diode pulse current	I_S Pulse	96	A
Maximum lead temperature for soldering purposes	T_L	260	°C

*Drain current limited by maximum junction temperature

Electrical Characteristics($T_{CASE}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	800	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	$I_D=250\mu A$, referenced to $25^{\circ}C$	-	0.11	-	$V/^{\circ}C$
Drain cut-off current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$ $T_j=25^{\circ}C$	-	-	1	μA
		$T_j=150^{\circ}C$	-	-	100	
Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V, V_{GS}=-30V$	-100	-	-	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	-	4.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=12A$ $T_j=25^{\circ}C$	-	0.205	0.24	Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=100V,$ $V_{GS}=0V,$ $f=10kHz$	-	2030	-	pF
Output capacitance	C_{oss}		-	83	-	pF
Reverse transfer capacitance	C_{rss}		-	1.8	-	pF

Switching Characteristics						
Turn-On delay time	$t_{d(on)}$	$V_{DD}=400V, I_D=24A,$ $R_G=4.7\Omega$	-	20	-	ns
Turn-On rise time	t_r		-	39	-	ns
Turn-Off delay time	$T_{d(off)}$		-	56	-	ns
Turn-Off Fall time	t_f		-	19	-	ns
Total Gate Charge	Q_g	$V_{DD}=400V,$ $I_D=24A,$ $V_{GS}=10V$	-	46	-	nC
Gate-Source charge	Q_{gs}		-	13	-	nC
Gate-Drain charge	Q_{gd}		-	21	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=24A$ (note 3)	-	0.9	1.4	V
Reverse recovery time	t_{rr}	$V_R=400V, I_F=12A$	-	280	-	ns

Reverse recovery charge	Q _{rr}	dIF/dt=130A/us	-	4.8	-	uC
Peak reverse recovery current	I _{rrm}		-	24	-	A

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	0.55	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	°C/W

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. ID = 10A, VDD = 50V, RG = 25Ω, Starting TJ = 25°C
3. Identical low side and high side switch with identical RG

Electrical Characteristics

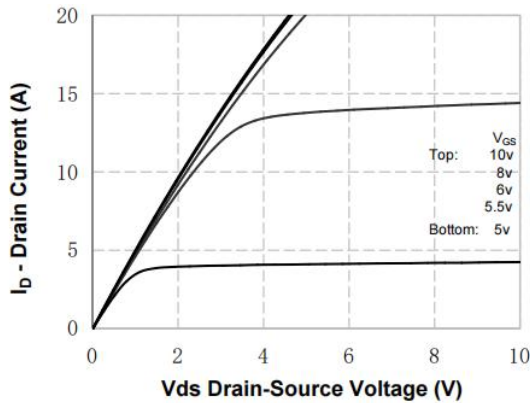


Figure 1. On-Region Characteristics

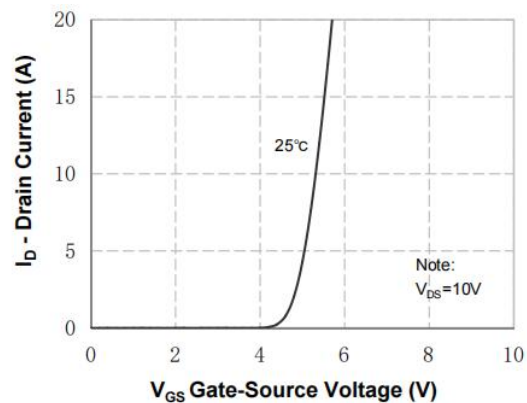


Figure 2. Transfer Characteristics

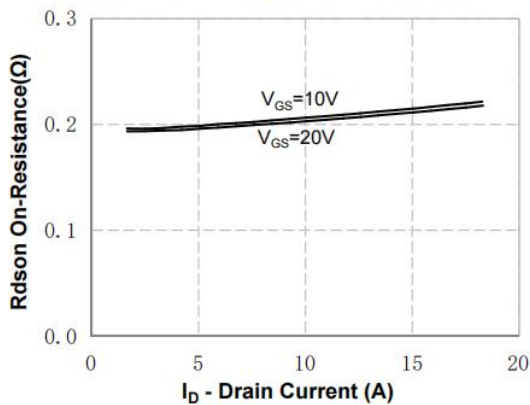


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

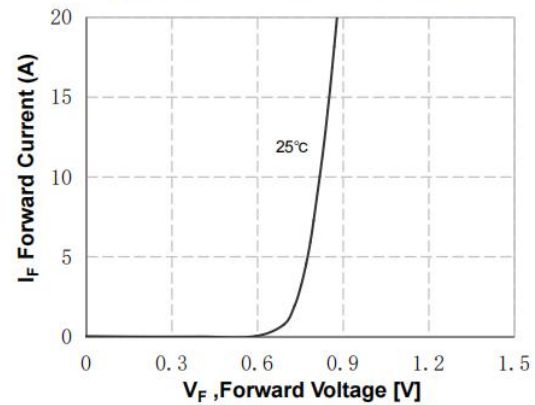


Figure 4. Body Diode Forward Voltage Variation with Source Current

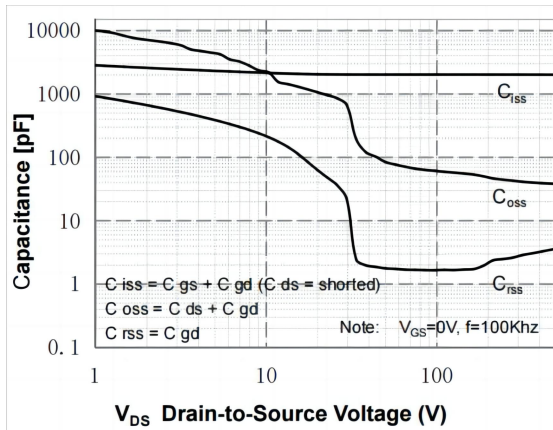


Figure 5. Capacitance Characteristics

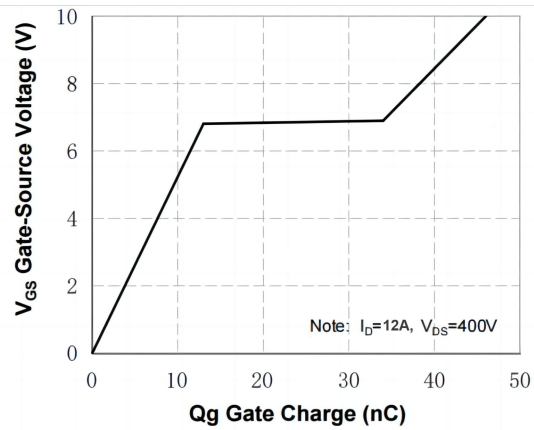


Figure 6. Gate Charge Characteristics

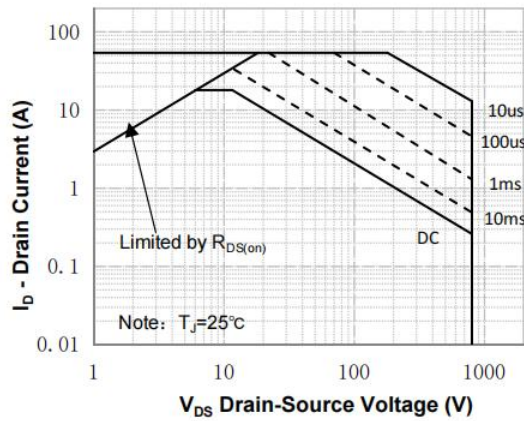


Figure 7. Maximum Safe Operating Area

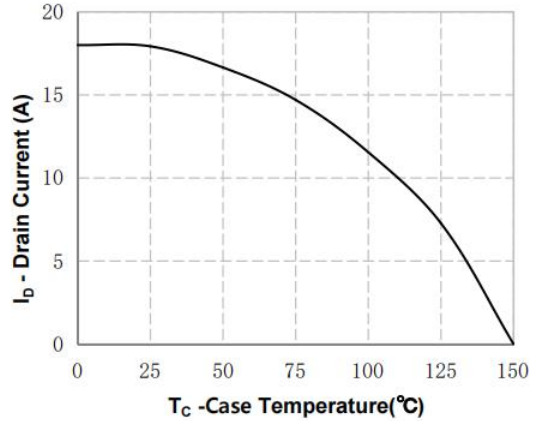


Figure 8. Maximum Drain Current vs Case Temperature

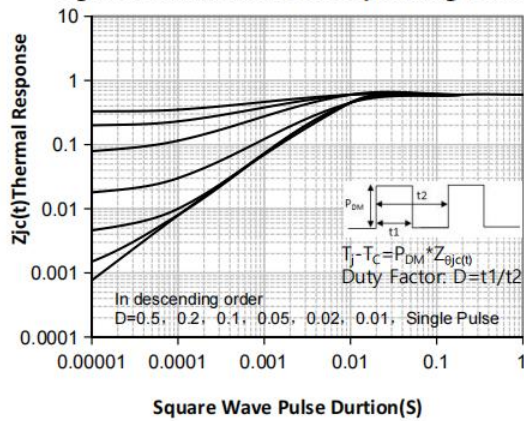
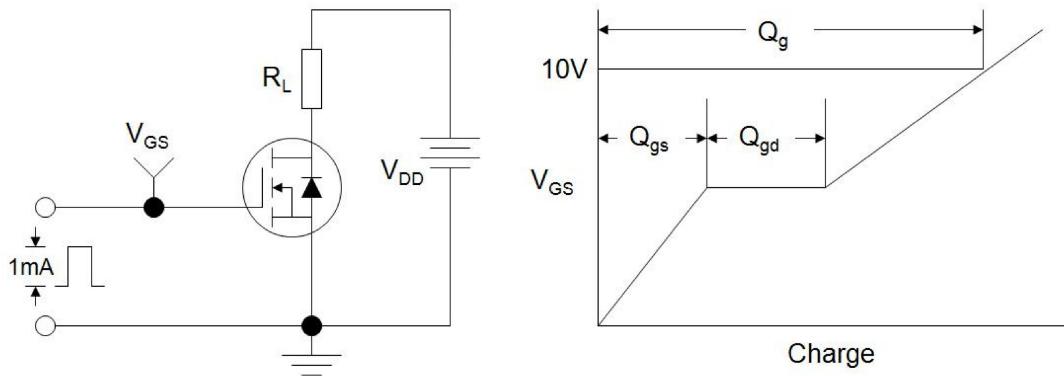
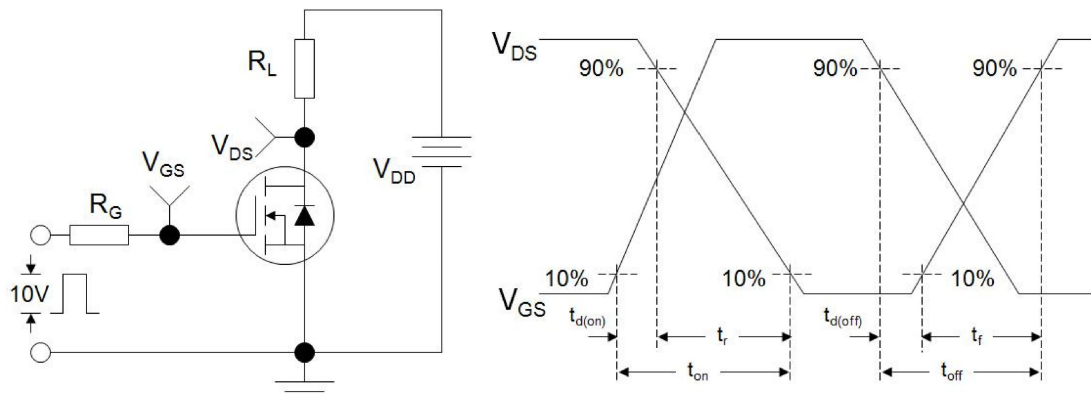


Figure 9. Transient Thermal Response Curve

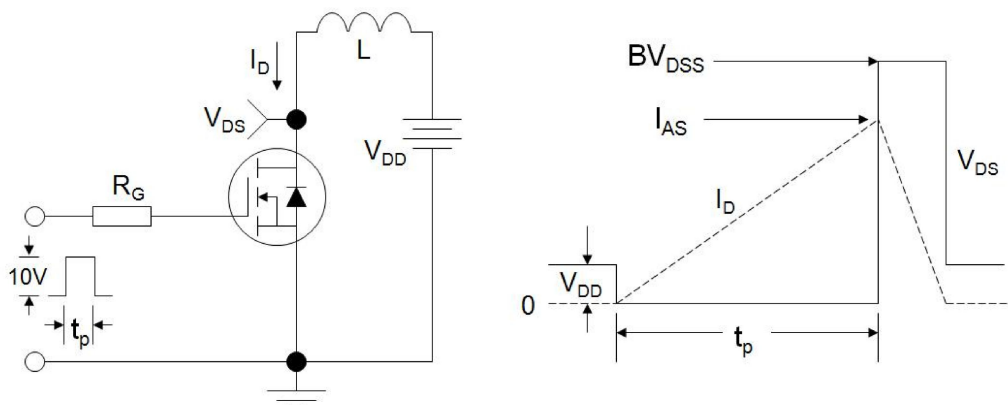
Gate Charge Test Circuit and Waveform



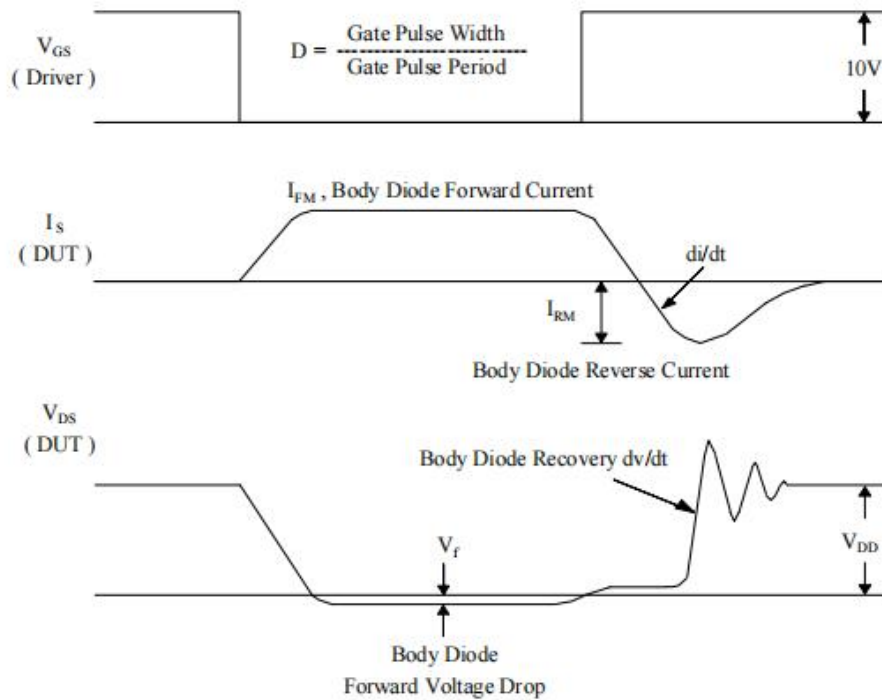
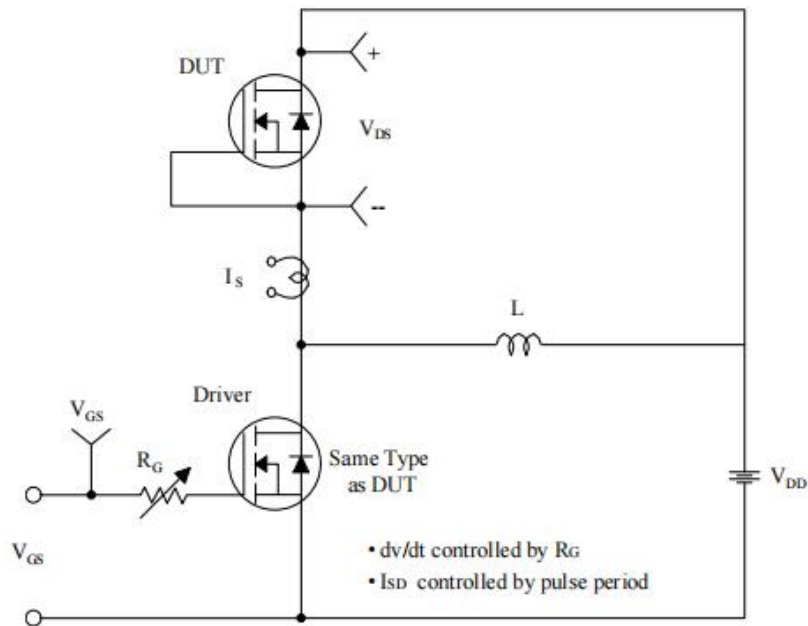
Resistive Switching Test Circuit and Waveform



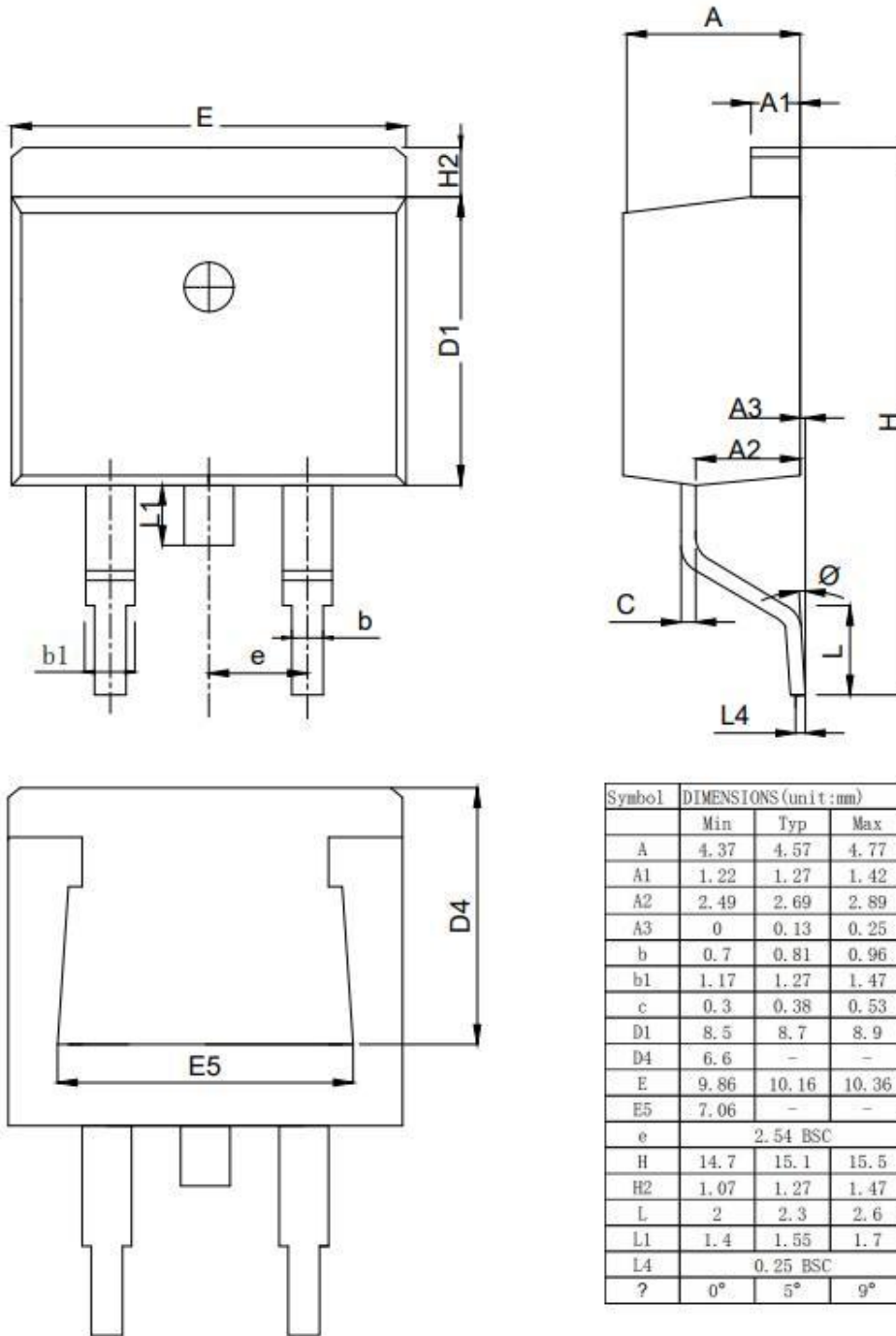
Unclamped Inductive Switching Test Circuit and Waveform



Peak Diode Recovery dv/dt Test Circuit & Waveforms



Package Mechanical DATA



Symbol	DIMENSIONS (unit:mm)		
	Min	Typ	Max
A	4.37	4.57	4.77
A1	1.22	1.27	1.42
A2	2.49	2.69	2.89
A3	0	0.13	0.25
b	0.7	0.81	0.96
b1	1.17	1.27	1.47
c	0.3	0.38	0.53
D1	8.5	8.7	8.9
D4	6.6	-	-
E	9.86	10.16	10.36
E5	7.06	-	-
e	2.54 BSC		
H	14.7	15.1	15.5
H2	1.07	1.27	1.47
L	2	2.3	2.6
L1	1.4	1.55	1.7
L4	0.25 BSC		
?	0°	5°	9°