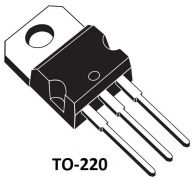
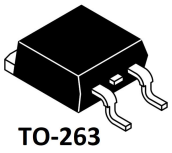
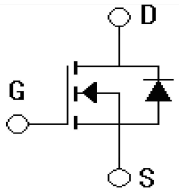
Features



- V_{DS}=100V,I_D=120A
  $R_{DS(on)}$=6mΩ @ V_{GS}=10V
- High density cell design for ultra low Rdson
- Low gate charge
- Improved dv/dt capability
- RoHS product



Applications



- Power switching application
- Isolated DC/DC converters in Telecom and Industrial
- Synchronous Rectification in DC/DC Converters

Absolute Ratings (Tc=25℃)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	±20	V
Drain Current-continuous	I_D	120	A
Drain Current-continuous (T_C=100℃)	I_D(T_C=100℃)	100	A
Drain Current-pulse (note 1)	I_{DM}	540	A
Single Pulsed Avalanche Energy (note 2)	E_{AS}	420	mJ
Maximum Power Dissipation	PD TC=25℃	245	W
	Derate above 25℃	2.0	W/℃
Operating and Storage Temperature Range	T_J,T_{STG}	-55~+150	℃

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Drain-Source Voltage	BV_{DSS}	I_D=250μA,V_{GS}=0V	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V，V_{DS}=0V	-	-	±100	nA

On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{DS}=10V,I_D=20A	-	6	6.8	mΩ
Forward Transconductance	g_{fs}	V_{DS}=5V,I_D=30A (note 4)	-	65	-	S
Gate resistance	Rg	Vds=0V，Scan F mode		2.5		Ω
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=48V, V_{GS}=0V, f=100KHZ	-	3525	-	pF
Output capacitance	C_{oss}		-	543	-	pF
Reverse transfer capacitance	C_{rss}		-	26	-	pF

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Switching-Characteristics						
Turn-On delay time	$t_{d(on)}$	V_{DD}=20V,I_D=-30A, R_G=3Ω V_{GS}=10V (note 4,5)	-	21	-	ns
Turn-On rise time	t_r		-	36	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	44	-	ns
Turn-Off rise time	t_f		-	20	-	ns
Total Gate Charge	Q_g	V_{DS}=80V,I_D=30A, V_{GS}=10V (note 4,5)	-	54	-	nC
Gate-Source charge	Q_{gs}		-	17	-	nC
Gate-Drain charge	Q_{gd}		-	13	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Curret	V_{SD}	V_{GS}=0V,I_S=50A	-	-	1.4	V
Diode Forward Current	I_S	TC=25℃	-	-	120	A
Reverse recovery time	Trr	I_S=30A,DI/DT=100A/μS	-	64	-	nS
Reverse recovery charge	Qrr		-	135	-	nC

Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(j-C)	0.51	℃/W
Thermal Resistance, Junction to Ambient	R_{th}(j-A)	47	℃/W

Notes:

1. Pulse width limited by maximum junction temperature
2. I_{AS}=41A, V_{DD}=50V, R_G=25 Ω,Starting T_J=25℃
3. I_{SD} ≤30A, di/dt = 100A/us, V_{DD} ≤ BV_{DSS}, Staring T_J =25℃
4. Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%
5. Essentially independent of operating temperature

Electrical Characteristics

Fig. 1. On-state characteristics

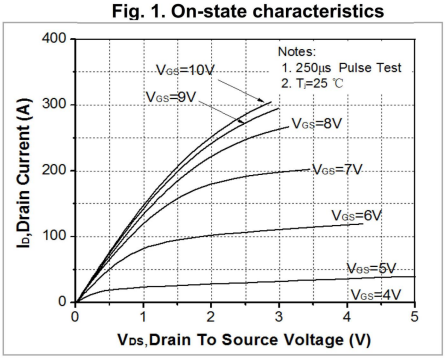


Fig. 2. Transfer Characteristics

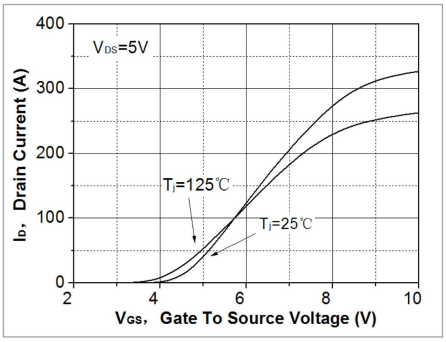


Fig. 3. On-resistance variation vs. drain current and gate voltage

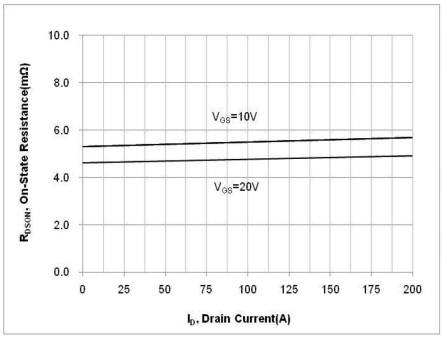


Fig. 4. On-state current vs. diode forward voltage

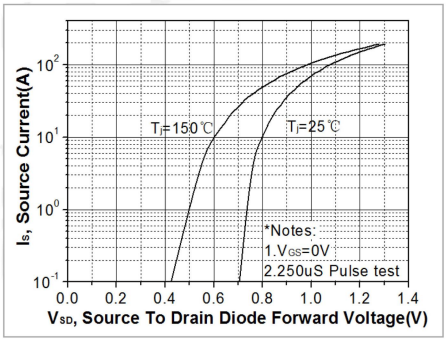


Fig 5. Breakdown voltage variation vs. junction temperature

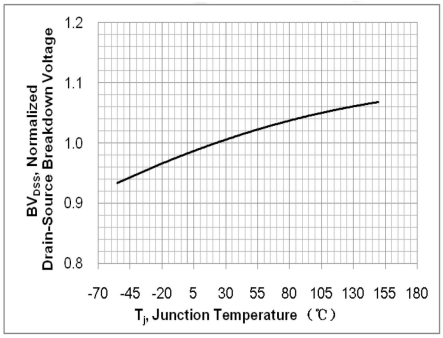


Fig. 6. On-resistance variation vs. junction temperature

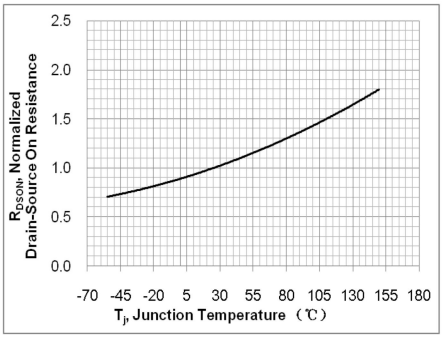


Fig. 7. Gate charge characteristics

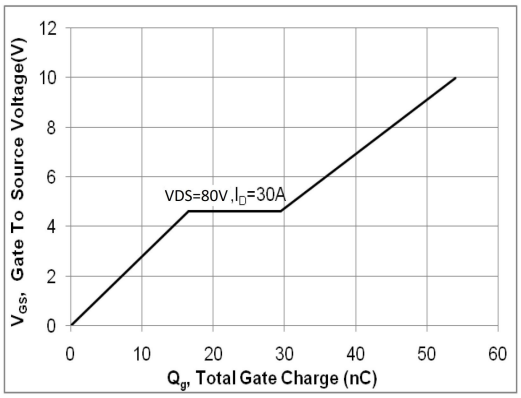


Fig. 8. Capacitance Characteristics

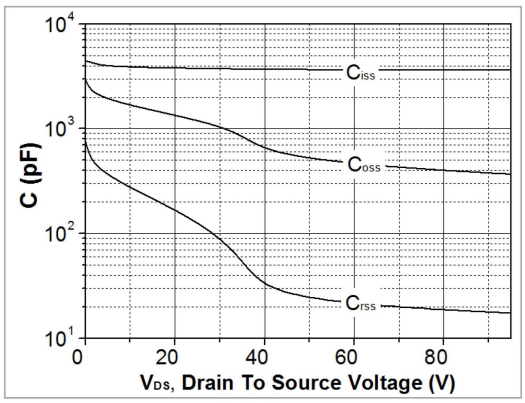


Fig. 9. Maximum safe operating area

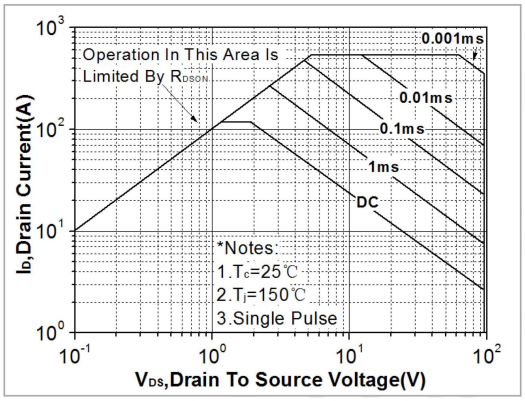


Fig. 10. Maximum drain current vs. case temperature

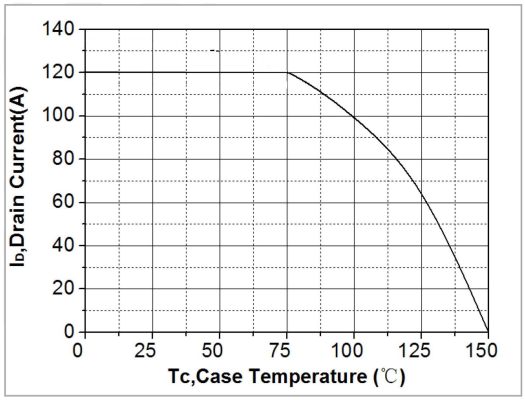


Fig. 11. Transient thermal response curve

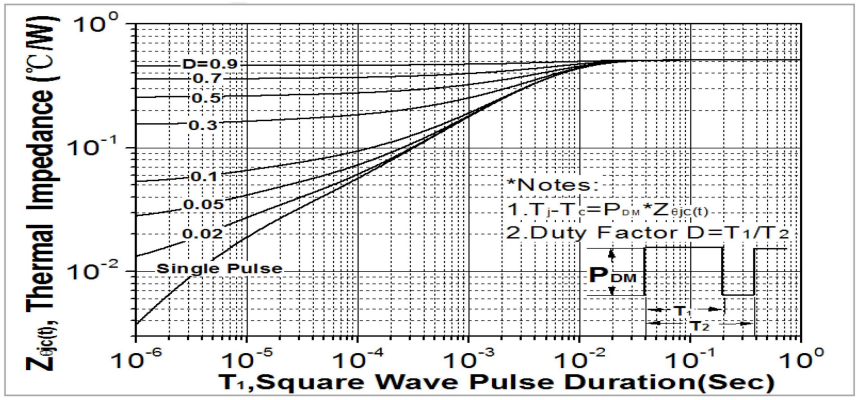


Fig. 12. Gate charge test circuit & waveform

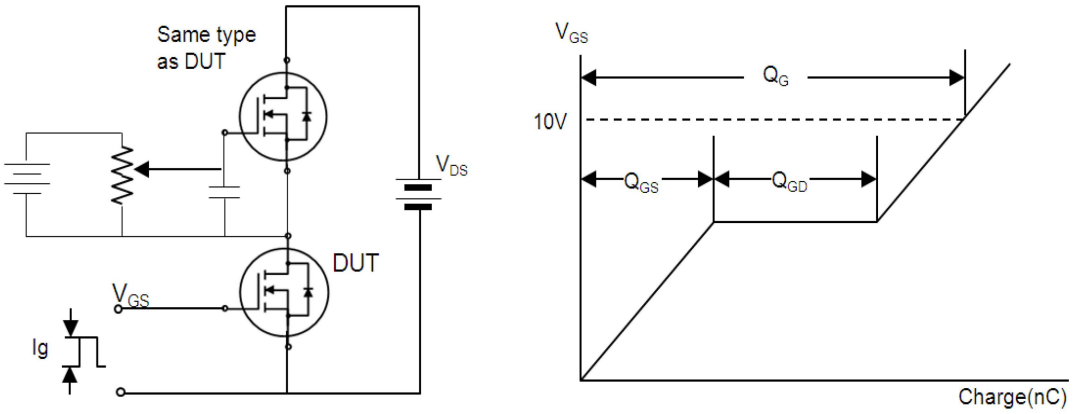


Fig. 13. Switching time test circuit & waveform

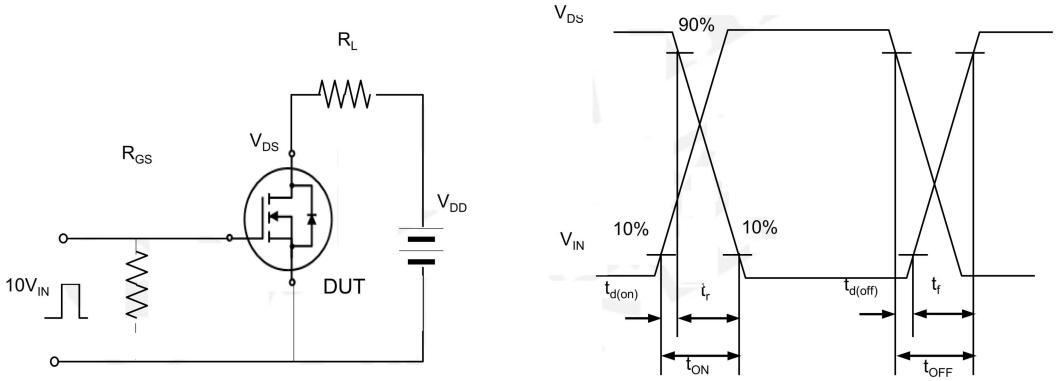


Fig. 14. Unclamped Inductive switching test circuit & waveform

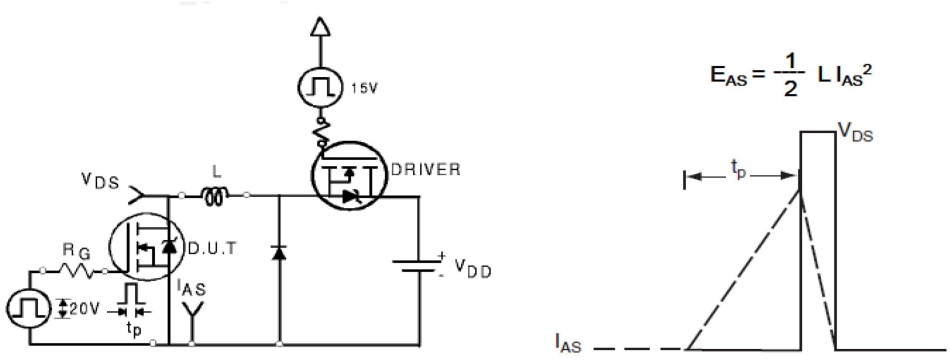
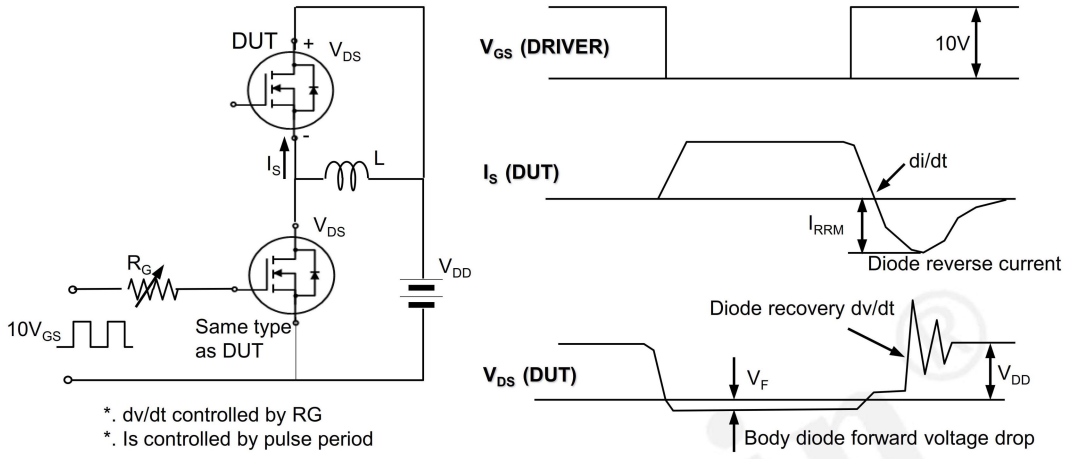
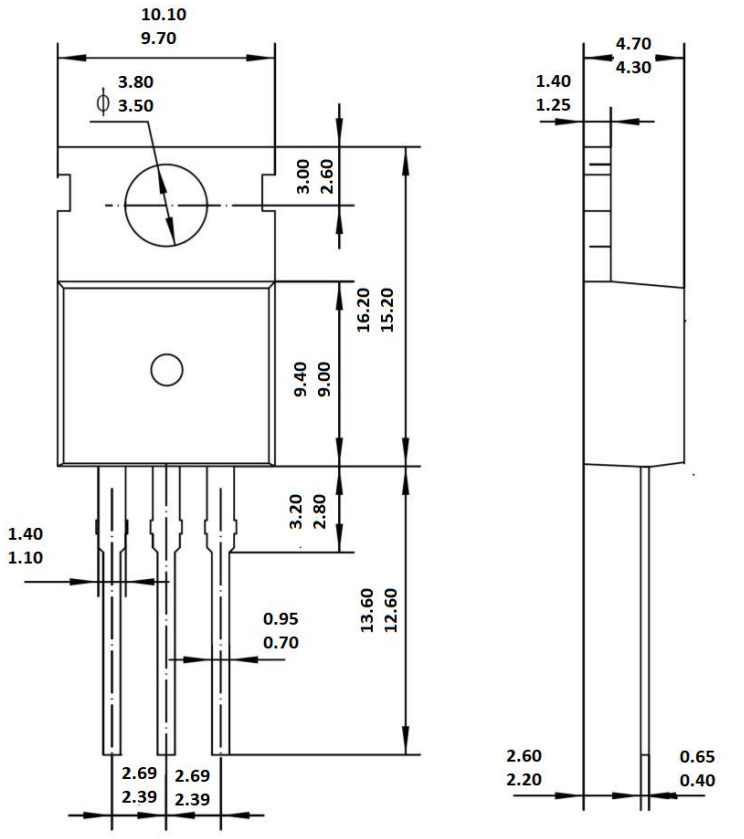


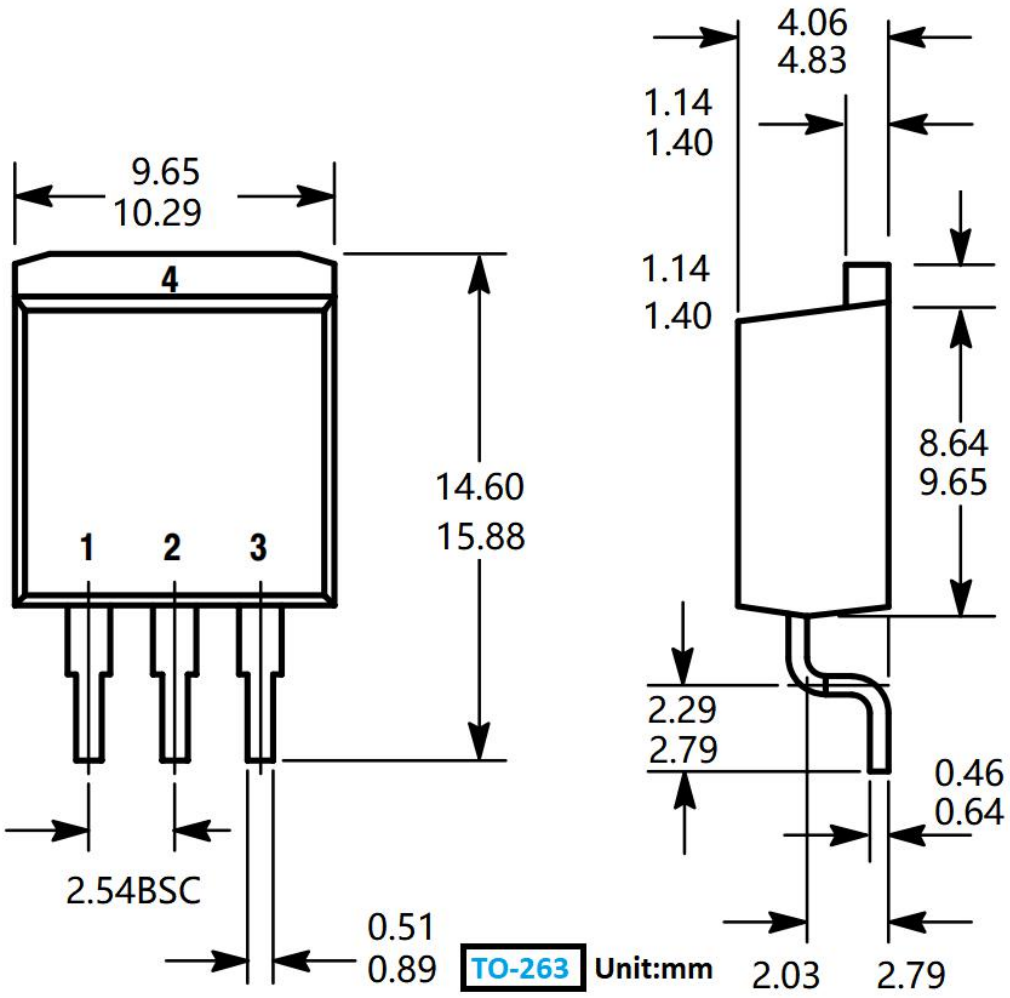
Fig. 15. Peak diode recovery dv/dt test circuit & waveform



Package Mechanical DATA



TO-220 **Unit: mm**


4.06
4.83
1.14
1.40
9.65
10.29
1.14
1.40
4
8.64
9.65
14.60
15.88
1
2
3
2.29
2.79
0.46
0.64
2.54BSC
0.51
0.89
TO-263
Unit:mm
2.03
2.79