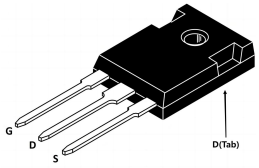
Features

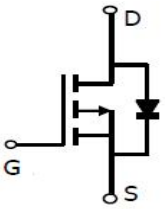
- V_{DS}=-200V,I_D=-26A
  $R_{DS(on)}$<170mΩ @ V_{GS}=-10V
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation



TO-247

Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Absolute Ratings (Tc=25℃)

Parameter	Symbol		Limit	Unit
Drain-Source Voltage	V_{DSS}		-200	V
Transient Gate-Source Voltage	V_{GSM}		±30	V
Continuous Gate-Source Voltage	V_{GSS}		±20	V
Drain Current-continuous	I_D		-26	A
Drain Current-continuous (T_C=100℃)	I_D(T_C=100℃)		-14.1	A
Drain Current-pulse (note 1)	I_{DM}		-70	A
Single Pulsed Avalanche Energy (note 2)	E_{AS}		1500	mJ
Maximum Power Dissipation	PD TC=25℃		297	W
	Derate above 25℃		0.4	W/℃
Operating and Storage Temperature Range	T_J,T_{STG}		-55~+150	℃
Maximum Lead Temperature for Soldering Purpose	T_L		300	℃
Mounting Torque	M_d		1.13	Nm
Weight	-		6.0	g
Isolation Voltage for terminal to Case	V_{ISO}	DC	2.4	KV
		AC	2.0	

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	-200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-200V,V_{GS}=0V	-	-	-2	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	-2.0	-3.0	-4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{DS}=-15V,I_D=-13A	-	130	170	mΩ
Forward Trans-conductance	g_{fs}	V_{DS}=-5V,I_D=-13A (note 4)	-	20	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=-30V, V_{GS}=0V, f=1.0MHZ	-	2485	-	pF
Output capacitance	C_{oss}		-	114	-	pF
Reverse transfer capacitance	C_{rss}		-	104	-	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}=-100V,I_D=-20A, R_G=3Ω V_{GS}=-10V (note 4,5)	-	16	-	ns
Turn-On rise time	t_r		-	18	-	ns
Turn-Off delay time	$t_{d(Off)}$		-	45	-	ns
Turn-Off rise time	t_f		-	19	-	ns
Total Gate Charge	Q_g	V_{DS}=-100V,I_D=-13A, V_{GS}=-10V (note 4,5)	-	56	-	nC
Gate-Source charge	Q_{gs}		-	15	-	nC
Gate-Drain charge	Q_{gd}		-	16	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=-13A	-	-	-3.2	V
Diode Forward Current	I_S		-	-	-26	A

Reverse recovery time	t_{rr}	V_{GS}=0V,I_S=-13A VSD=-100V -dI_F/dt=100A/μs (note 4)	-	250	-	ns
Reverse recovery charge	Q_{rr}		-	2100	-	nC
Reverse recovery Current	I_{RM}		-	-10.0	-	A

Thermal Characteristic

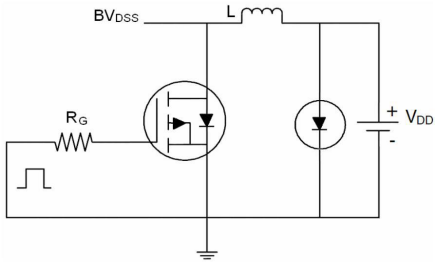
Parameter	Symbol	Value	Unit
Thermal Resistance,junction to Case	R_{th}(J-C)	0.42	℃/W
Thermal Resistance,junction to Ambient	R_{th}(J-A)	40	℃/W

Notes:

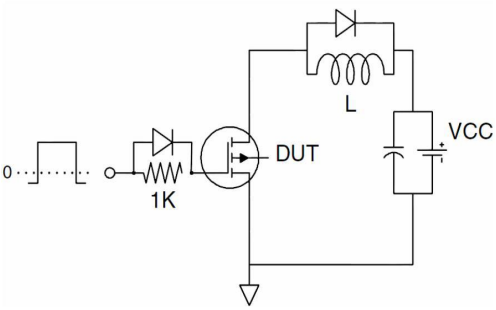
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition：Tj=25℃,VDD=-30V,V =-10V,L=0.5mH,Rg=25Ω

Test Circuit

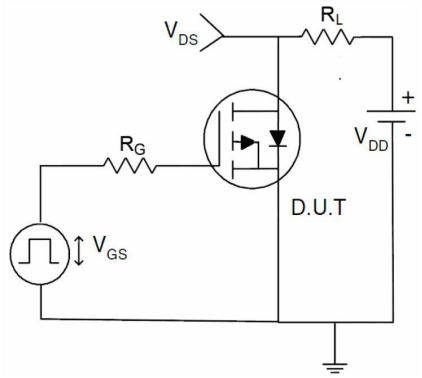
(1) E_{AS} Test Circuit



(2) Gate Charge Test Circuit



(3) Switch Time Test Circuit



Typical characteristic curves

Fig. 1. Output Characteristics @ T_J= 25ºC

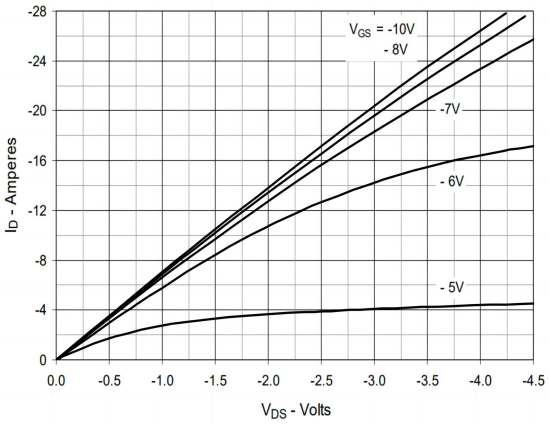


Fig. 2. Extended Output Characteristics @ T_J = 25ºC

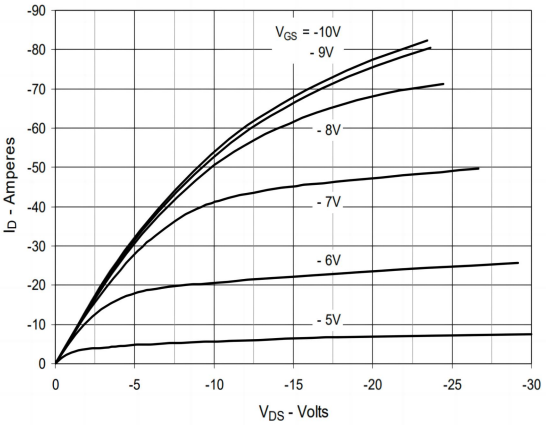


Fig. 3. Output Characteristics @ T_J = 125ºC

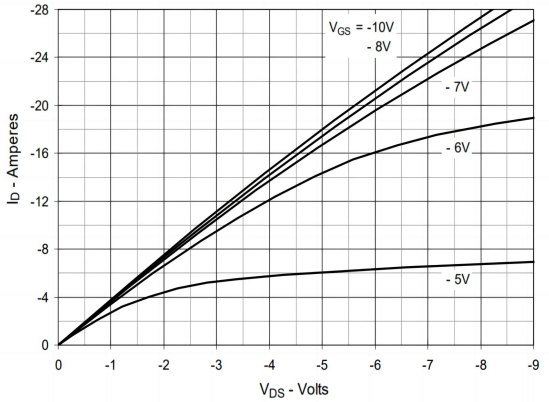


Fig. 4. $R_{DS(on)}$ Normalized to I_D = -13A Value vs. Junction Temperature

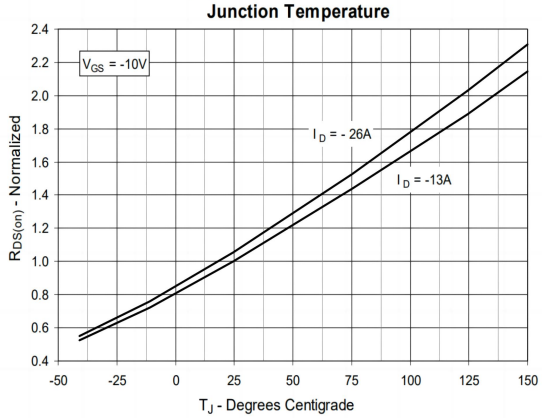


Fig. 5. $R_{DS(on)}$ Normalized to I_D = -13A Value vs. Drain Current

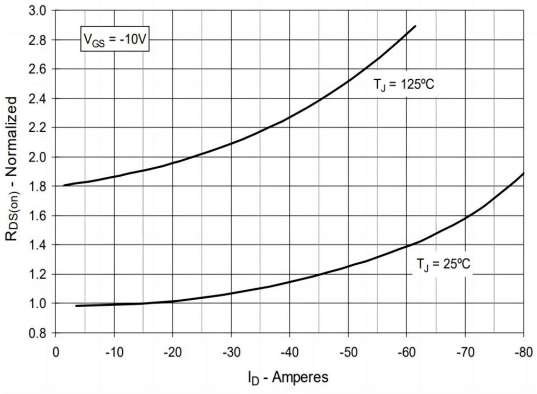


Fig. 6. Maximum Drain Current vs. Case Temperature

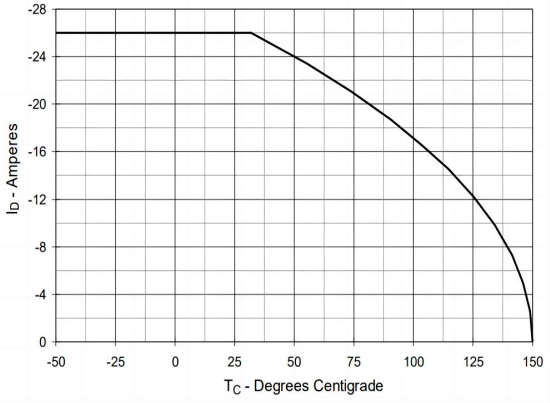


Fig. 7. Input Admittance

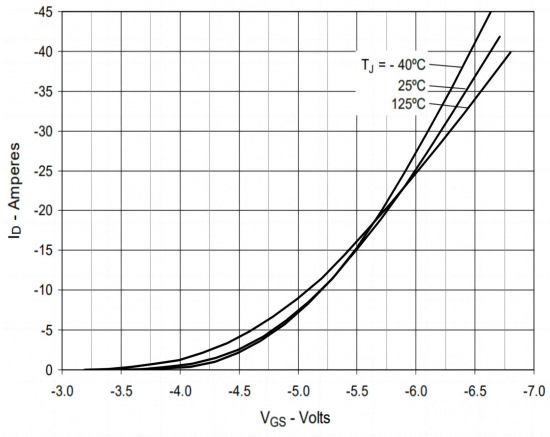


Fig. 8. Transconductance

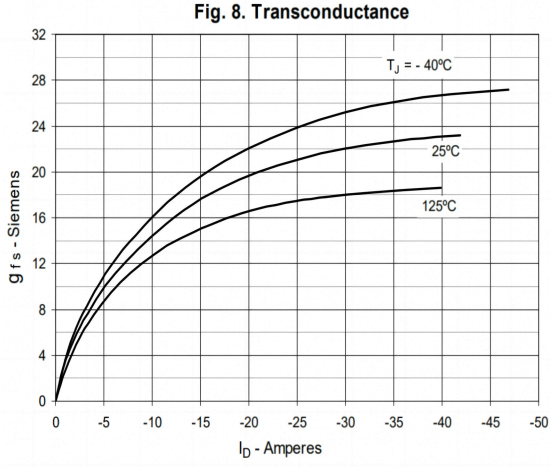


Fig. 9. Forward Voltage Drop of Intrinsic Diode

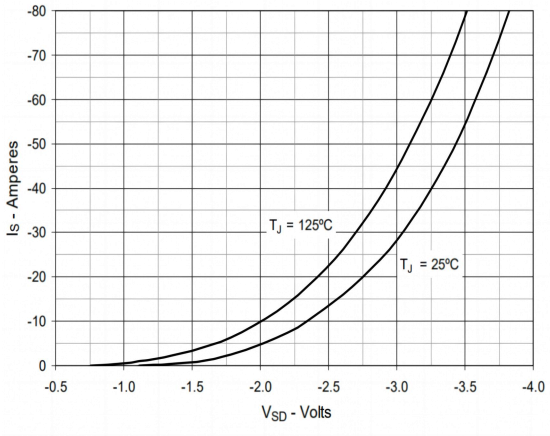


Fig. 10. Gate Charge

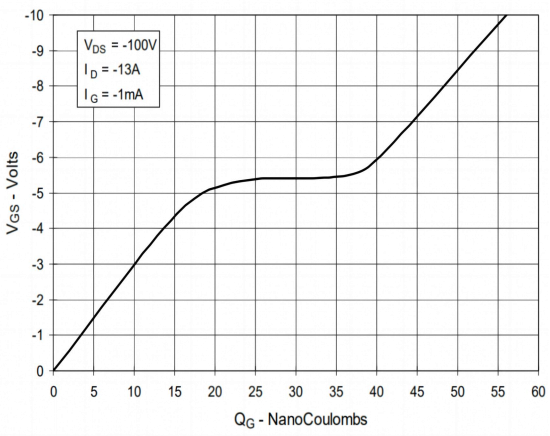


Fig. 11. Capacitance

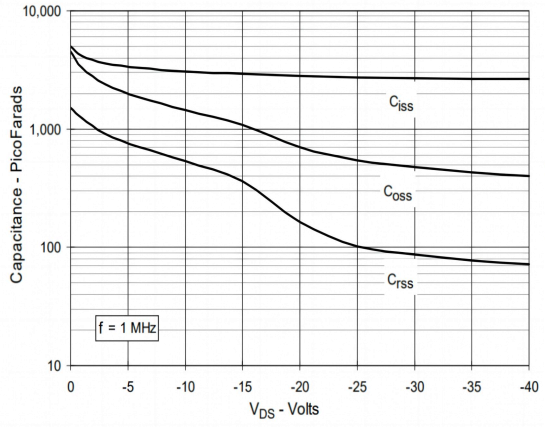


Fig. 12. Maximum Transient Thermal Impedance

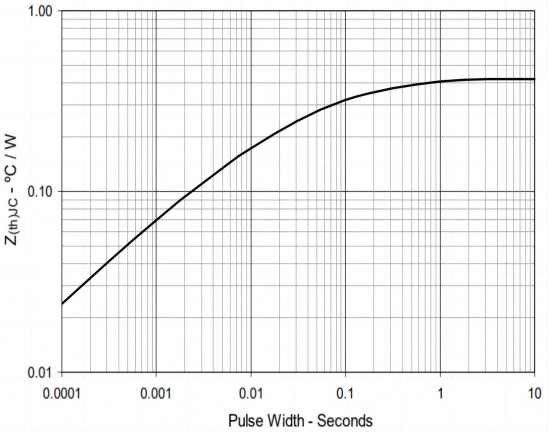


Fig. 13. Forward-Bias Safe Operating Area @ T_C = 25°C

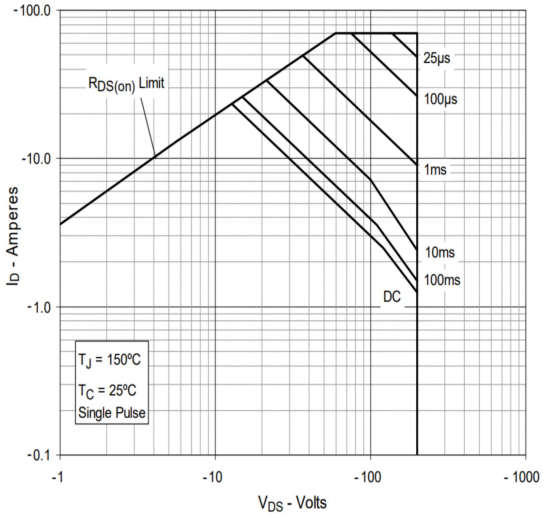
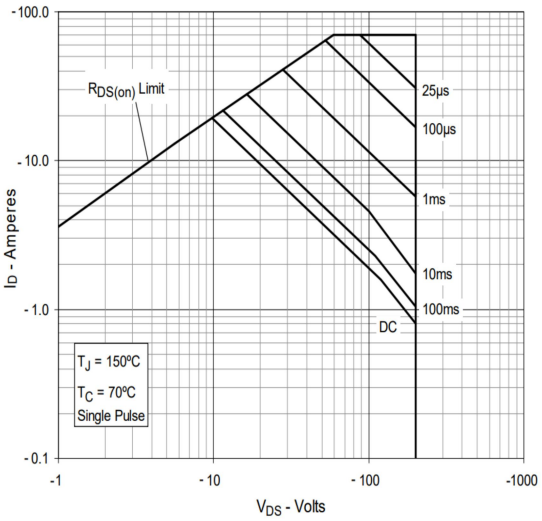
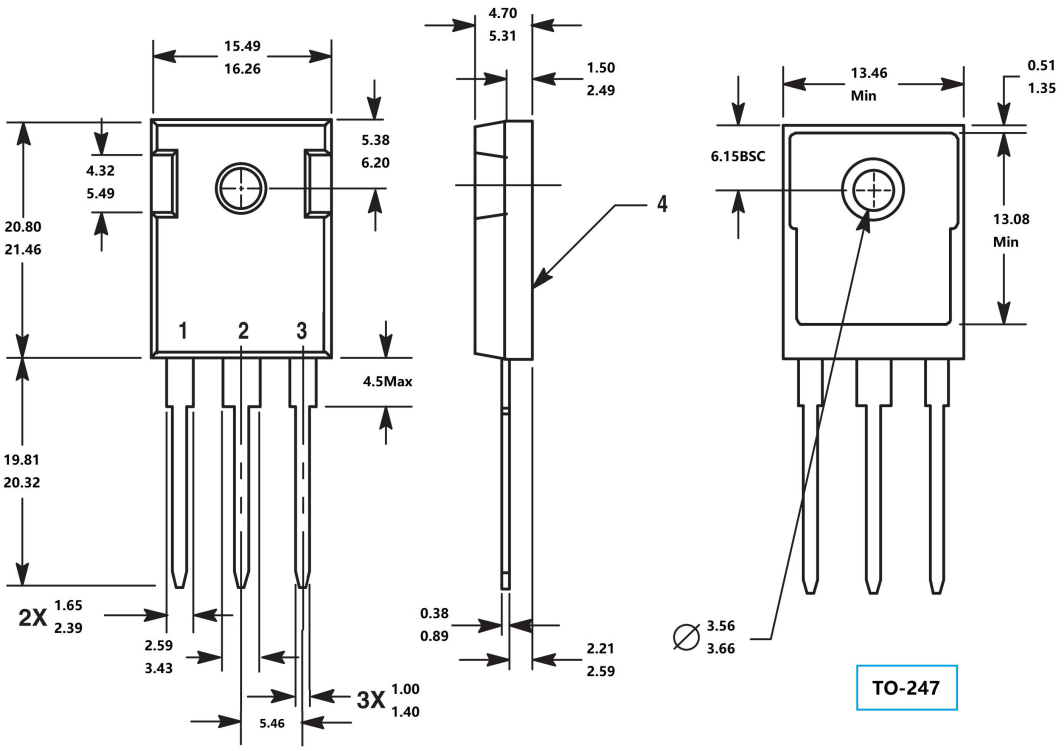


Fig. 14. Forward-Bias Safe Operating Area @ T_C = 70°C



Package Mechanical DATA



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