

ID	$R_{DS(ON)}$ (Typ)	VDSS
42A	63mΩ	650V

Applications:

- Sever
- EV Charging
- Telecom
- Solar

Features:

- Low gate charge
- Low $R_{DS(on)}$ per chip area(Low FOM)
- Extremely fast body diode
- Excellent high commutation ruggedness
- Excellent ESD robustness
- VDS @ Tj max 700V

Ordering Information

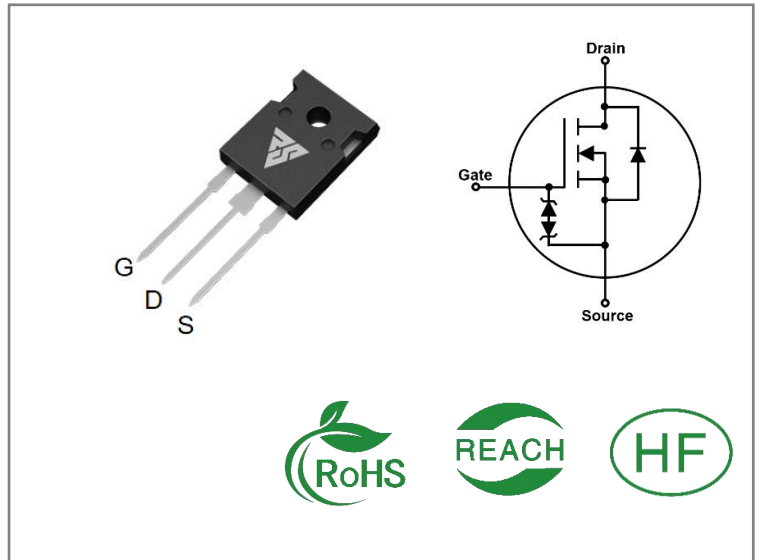
Part Number	Package	Marking	Packing	Qty.
RSF65R070W	T0-247-3	RSF65R070W	Tube	30 PCS

Absolute Maximum Ratings Tc= 25°C unless otherwise specified

Symbol	Parameter	RSF65R070W	Units
VDSS	Drain-to-Source Voltage	650	V
ID	Continuous Drain Current TC=25°C	42	A
ID	Continuous Drain Current TC=100°C	29	
IDM	Pulsed Drain Current (Note*1)	105	
PD	Power Dissipation	298	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Energy VDD = 50V, IAS=5.1A, TJ=25°C	171	mJ
dv/dt	MOSFET dv/dt ruggedness VDS = 0...400V	50	V/ns
dv/dt	Reverse diode dv/dt VDS = 0...400V, Tj = 25°C, ISD≤ID	15	
TL TPKG	Maximum Temperature for Soldering	300	°C
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds	260	
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" Table may cause permanent damage to the device.



Thermal Resistance

Symbol	Parameter	RSF65R070W	Units	Test Conditions
R θ JC	Junction-to-Case	0.42	$^{\circ}\text{C} / \text{W}$	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 150 $^{\circ}\text{C}$
R θ JA	Junction-to- Ambient	62		1 cubic foot chamber, free air.

OFF Characteristics $T_J = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	650	--	--	V	VGS=0V ID=250 μA
IDSS	Drain- to- Source Leakage Current	--	--	5	μA	VDS=650V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	1	μA	VGS=20V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-1		VGS=-20V VDS=0V

ON Characteristics $T_J = 25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	63	70	m Ω	VGS=10V ID=21A
VGS(TH)	Gate Threshold Voltage	3	4	5	V	VGS=VDS ID=250 μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	35	--	nS	VDS=400V ID=21A RG=3 Ω
trise	Rise Time	--	34	--		
td(OFF)	Turn- OFF Delay Time	--	116	--		
tfall	Fall Time	--	5	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	3940	--	pF	VGS=0V VDS=400V f=200KHz
Coss	Output Capacitance	--	60	--		
Crss	Reverse Transfer Capacitance	--	2.3	--		
Qg	Total Gate Charge	--	83	--	nC	VDS=400V ID=21A VGS=10V
Qgs	Gate- to- Source Charge	--	24	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	34	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	42	A	Integral pn- diode in MOSFET
ISM	Maximum Pulsed Current	--	--	168	A	
VSD	Diode Forward Voltage	--	--	1.4	V	IS=21A VGS=0V
Irr	Reverse Recovery current	--	5.3	--	A	VDD=400V IS=21A di/dt=100A/μs
trr	Reverse Recovery Time	--	71	--	nS	
Qrr	Reverse Recovery Charge	--	186	--	nC	

Notes:

* 1. Repetitive rating, pulse width limited by maximum junction temperature.

Typical Feature Curve

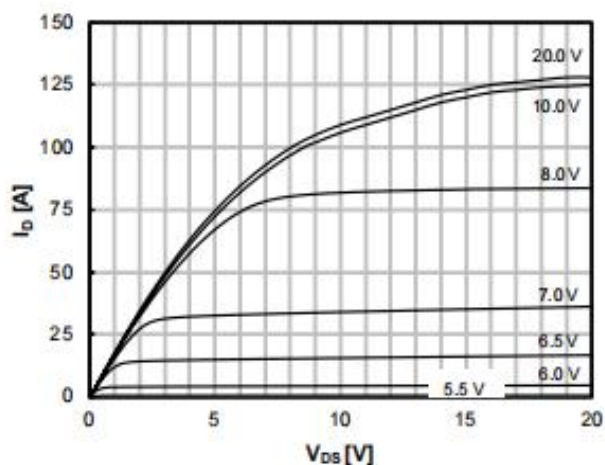


Fig. 1 Output Characteristics

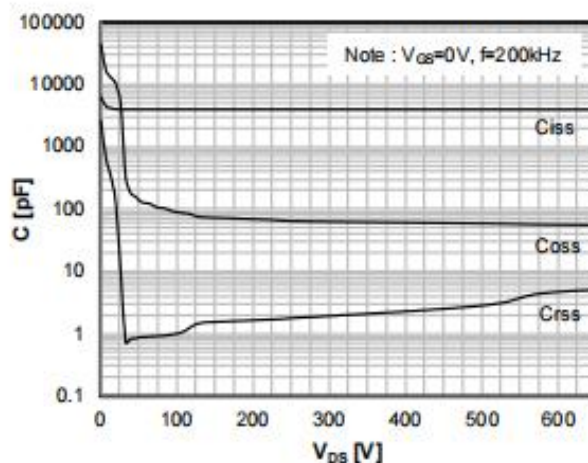


Fig. 2 Capacitances

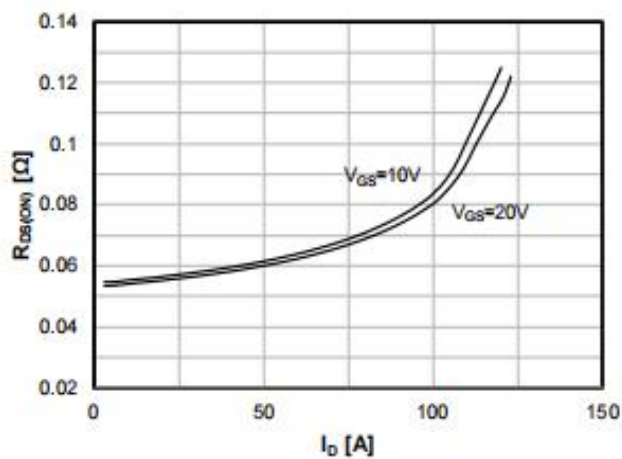


Fig. 3 On-state Resistance

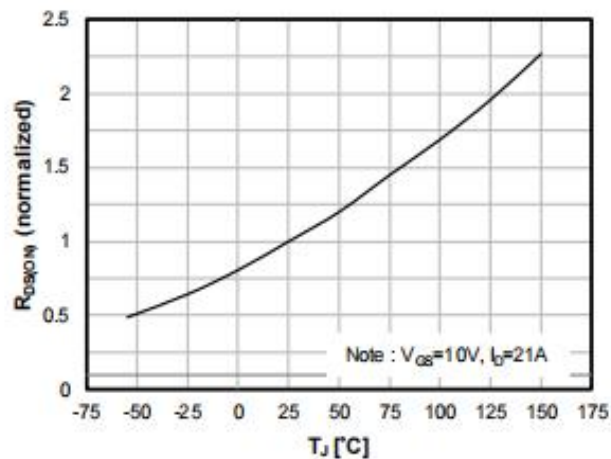


Fig. 4 On-state Resistance with Temperature

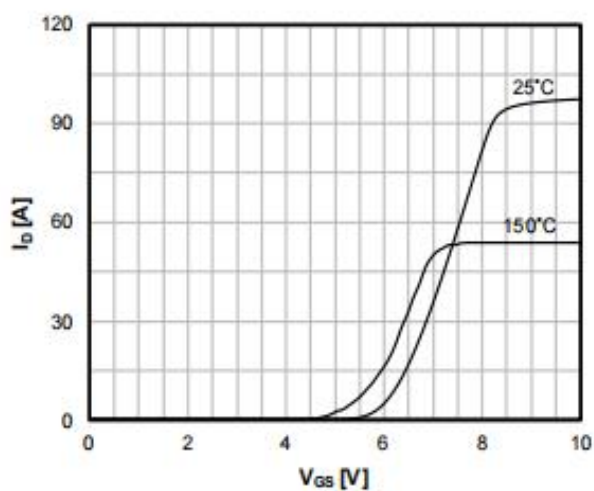


Fig. 5 Transfer Characteristics

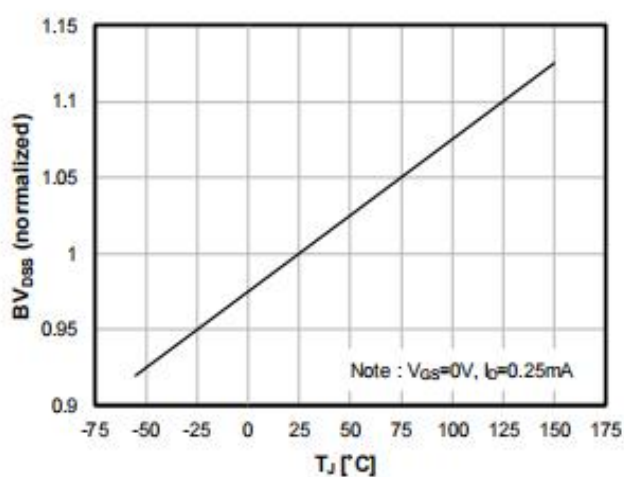


Fig. 6 Breakdown Voltage with Temperature

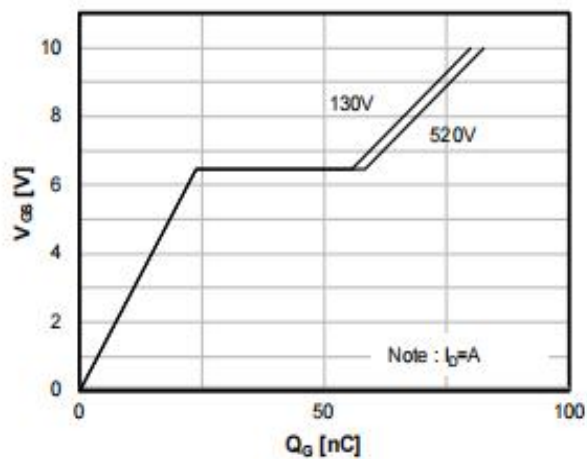


Fig 7. Gate Charge

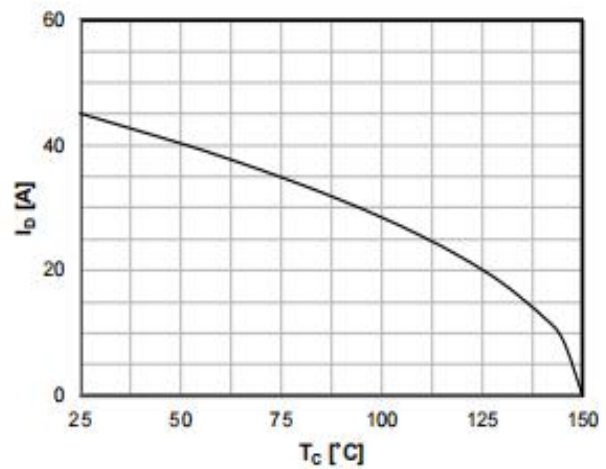


Fig 8. Maximum Drain Current

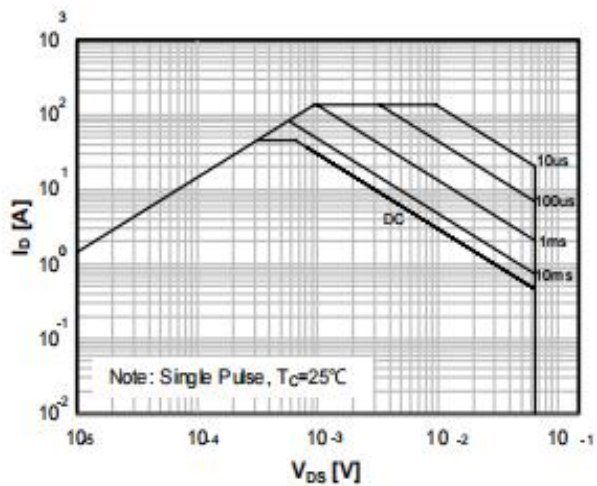


Fig 9. Safe Operating Area

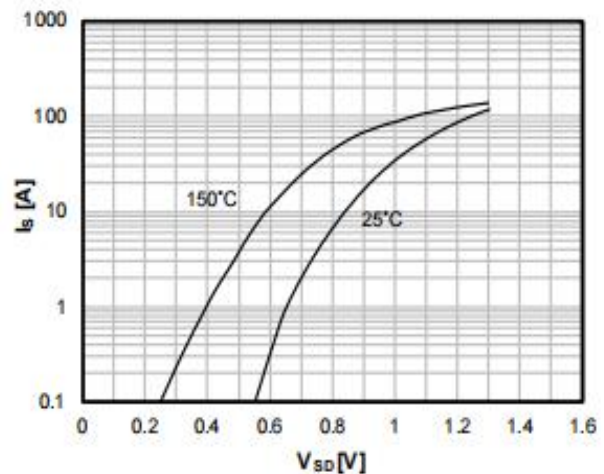


Fig 10. Body Diode Characteristics

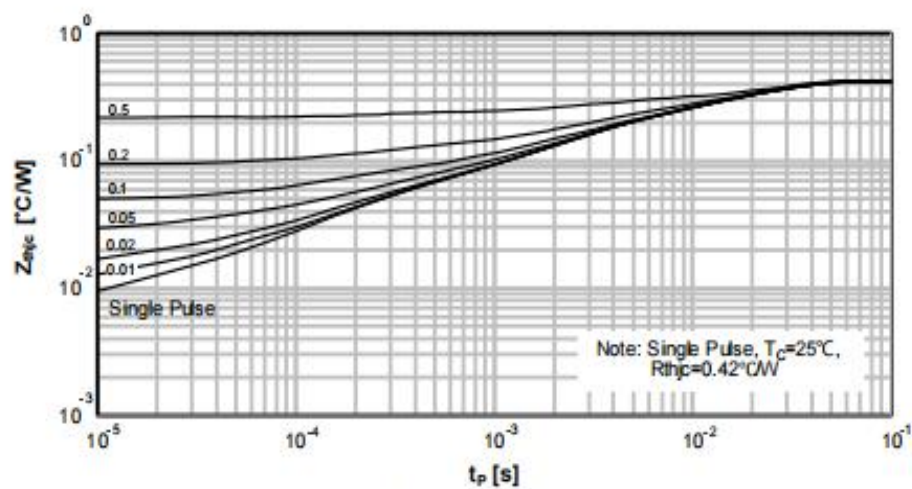


Fig 11. Maximum Transient Thermal Characteristics

Test Circuits and Waveforms

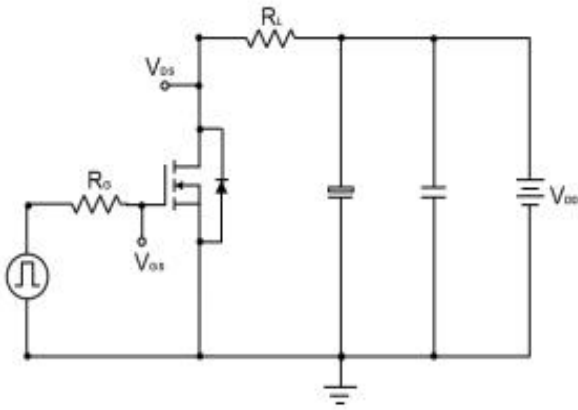


Fig 13. Test circuit for resistive load switching times

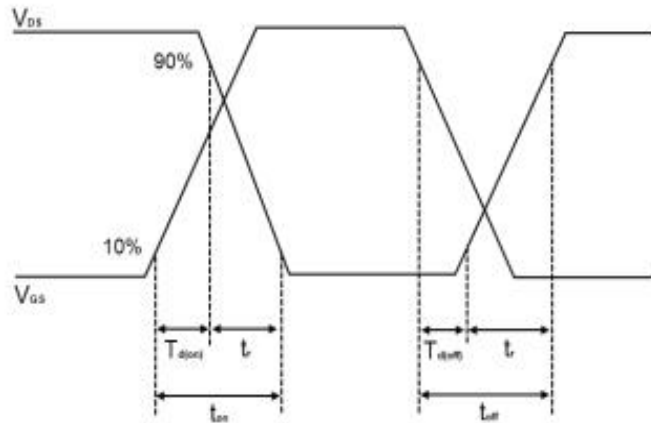


Fig 14. Switching times waveform

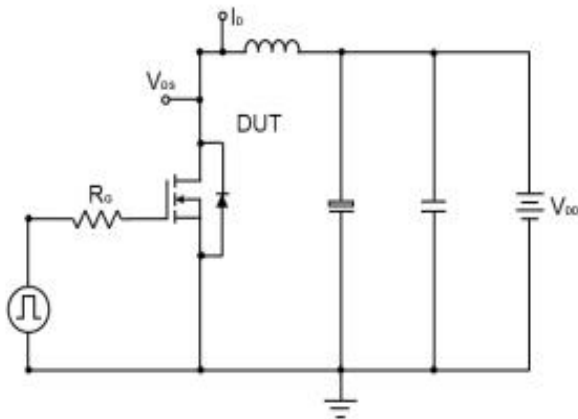


Fig 15. Test circuit for unclamped inductive load

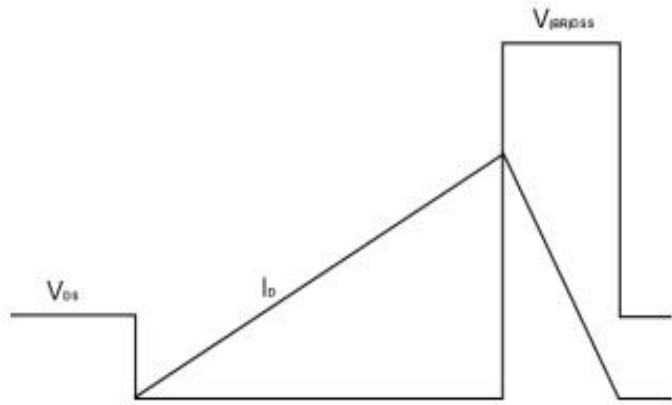


Fig 16. Unclamped inductive waveform

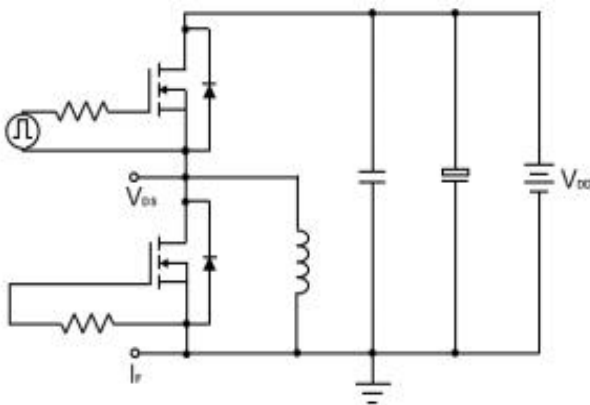


Fig 17. Test circuit for diode

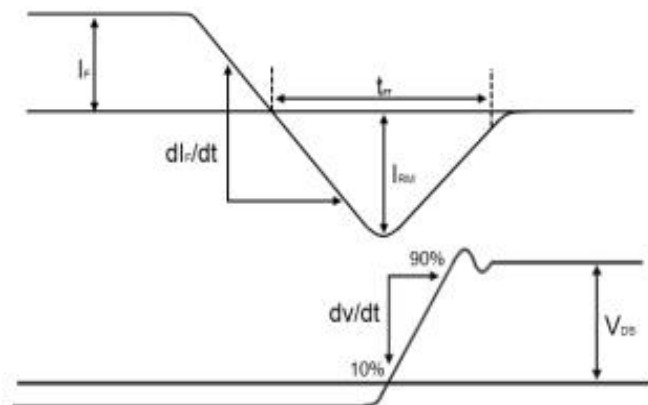
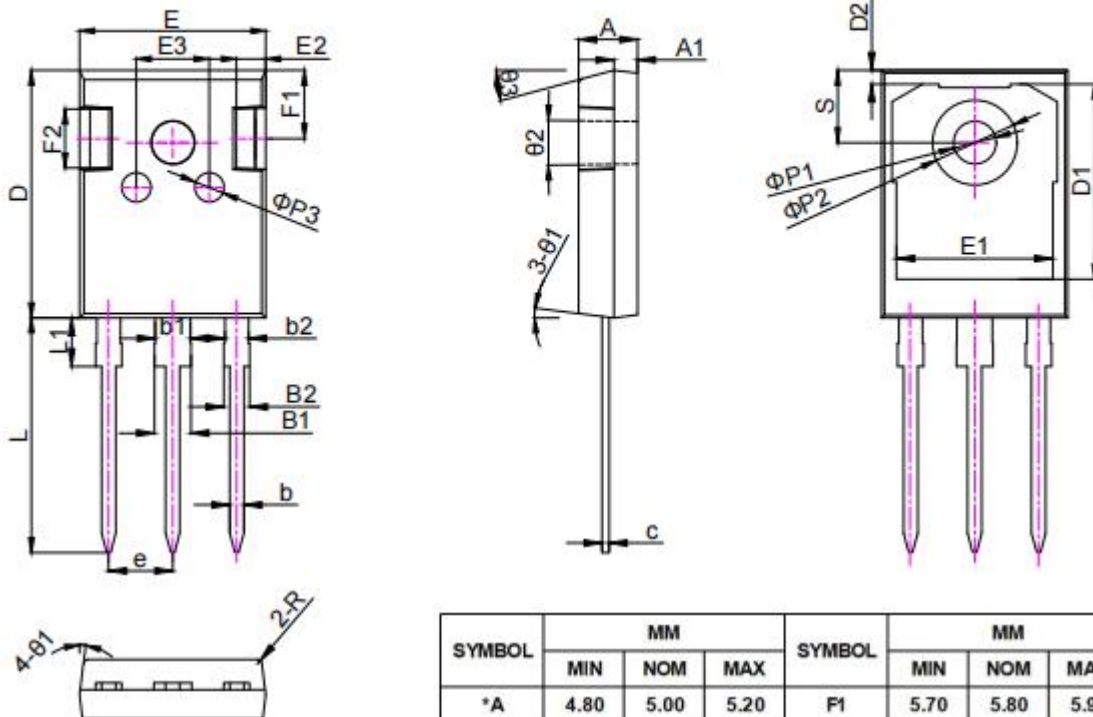


Fig 18. Diode recovery

Package outline drawing(TO-247 Unit: mm)



SYMBOL	MM			SYMBOL	MM		
	MIN	NOM	MAX		MIN	NOM	MAX
*A	4.80	5.00	5.20	F1	5.70	5.80	5.90
A1	1.90	2.00	2.10	F2	4.85	5.00	5.15
*b	1.10	1.20	1.30	*e	5.39	5.44	5.49
b1	2.90	3.00	3.10	*L	19.72	19.92	20.12
b2	1.95	2.00	2.05	*L1	4.03	4.13	4.23
*B1	3.00	3.10	3.20	Ø1	5°	7°	9°
*B2	2.00	2.10	2.20	Ø2	1°	2°	3°
*c	0.50	0.6	0.70	Ø3	13°	15°	17°
*D	20.80	21	21.20	*Φ P1	3.50	3.60	3.70
D1	16.40	16.55	16.70	Φ P2	7.09	7.19	7.29
D2	1.07	1.17	1.27	Φ P3	2.40	2.50	2.60
*E	15.60	15.80	16.00	*Q1	2.31	2.41	2.51
E1	13.11	13.26	13.41	S	6.05	6.15	6.25
E2	2.40	2.50	2.60	R	0.30	0.40	0.50
E3	6.10	6.20	6.30	带*为关键检验尺寸			

注:
1.表面粗糙度 $Ra \leq 1.14 \pm 0.20 \mu m$
2.带*为关键检验尺寸

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