

Applications

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

Features

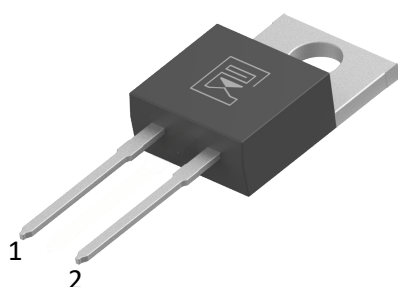
- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

Product Summary

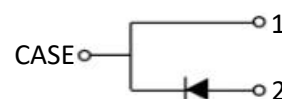
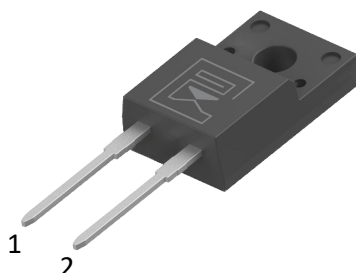
V_{RRM}	400	V
$I_F@T_c=110^{\circ}\text{C}$	5	A
$V_{F,MAX}@5A,T_c=25^{\circ}\text{C}$	1	V
$V_{F,TYP}@5A,T_c=125^{\circ}\text{C}$	0.8	V
$I_{R,MAX}@T_c=25^{\circ}\text{C}$	25	uA



TO-220



TO-220F



1、CATHODE

2、ANODE

Package Marking and Ordering Information

Ordering code	Marking	Package	Packaging	Min. package quantity
MC-M5F40	M5F40	TO-220	Tube	1000
MF-M5F40	M5F40	TO-220F	Tube	1000

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Ratings	Unit
D.C. Reverse Voltage		V_R	400	V
Repetitive Reverse Voltage		V_{RRM}	400	V
Average Forward Current	TC=110°C, Duty=0.5	$I_{F(AV)(per\ leg)}$	5	A
Peak Repetitive Forward Current	TC=110°C, Duty=0.5	I_{FM}	20	A
Non-Repetitive Peak Surge Current	T=45°C, 8.3ms	I_{FSM}	120	A
Junction Temperature		T_J	-55 to +175	°C
Storage Temperature		T_{stg}	-55 to +175	°C

Thermal Characteristics

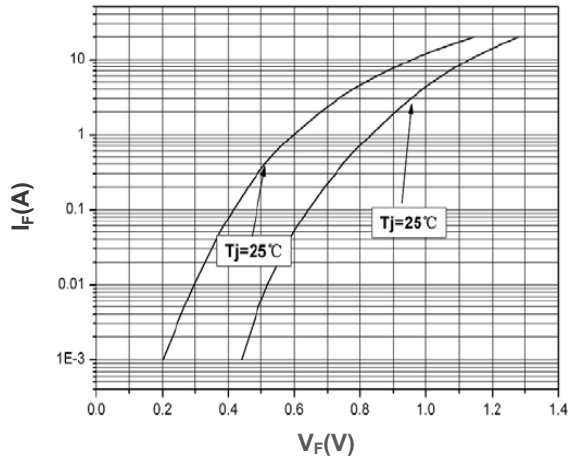
Parameter	Symbol	Package	Max	Unit
Maximum Thermal Resistance	$R_{\theta JC}$	TO-220	2	°C/W
	$R_{\theta JC}$	TO-220F	4	°C/W

Electrical Characteristics (Tc=25°C unless otherwise noted)

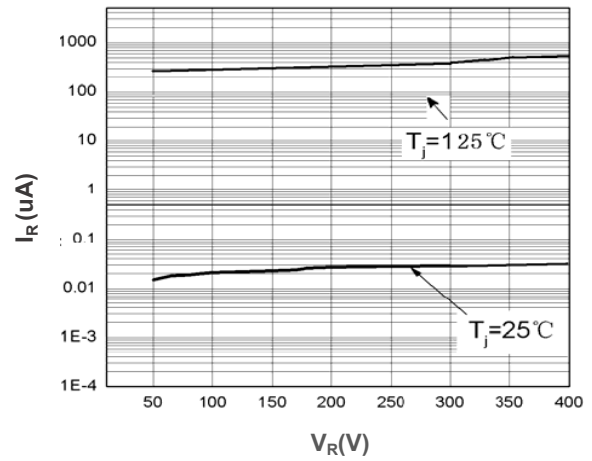
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Forward Voltage	V _F	I _F =5A, T _J =25°C	-	1	1.3	V	
		I _F =5A, T _J =125°C	-	0.8	-	V	
Reverse Leakage Current	I _{RM}	VR=400V, TJ=25°C	-	-	25	uA	
		VR=400V, TJ=125°C	-	-	500	uA	
Reverse Recovery Time	t _{rr}	I _F =1A, V _R =30V, diF/dt=-200A/μs	-	30	-	ns	
Reverse Recovery Time	t _{rr}	I _F =5A V _R =400V diF/dt=-200A/μs	T _J =25°C	-	60	-	ns
Reverse Recovery Time	t _{rr}		T _J =125°C	-	95	-	ns
Reverse Recovery Charge	Q _{rr}		T _J =125°C	-	185	-	nC
Max. Reverse Recovery Current	I _{RRM}		T _J =125°C	-	8	-	A



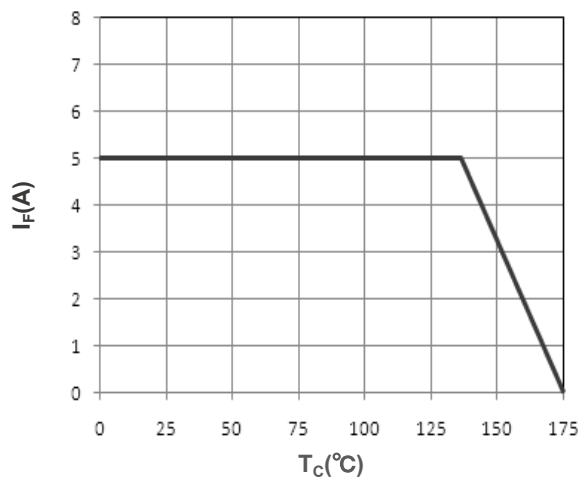
Characteristics Curves



Forward Characteristics



Reverse Characteristics



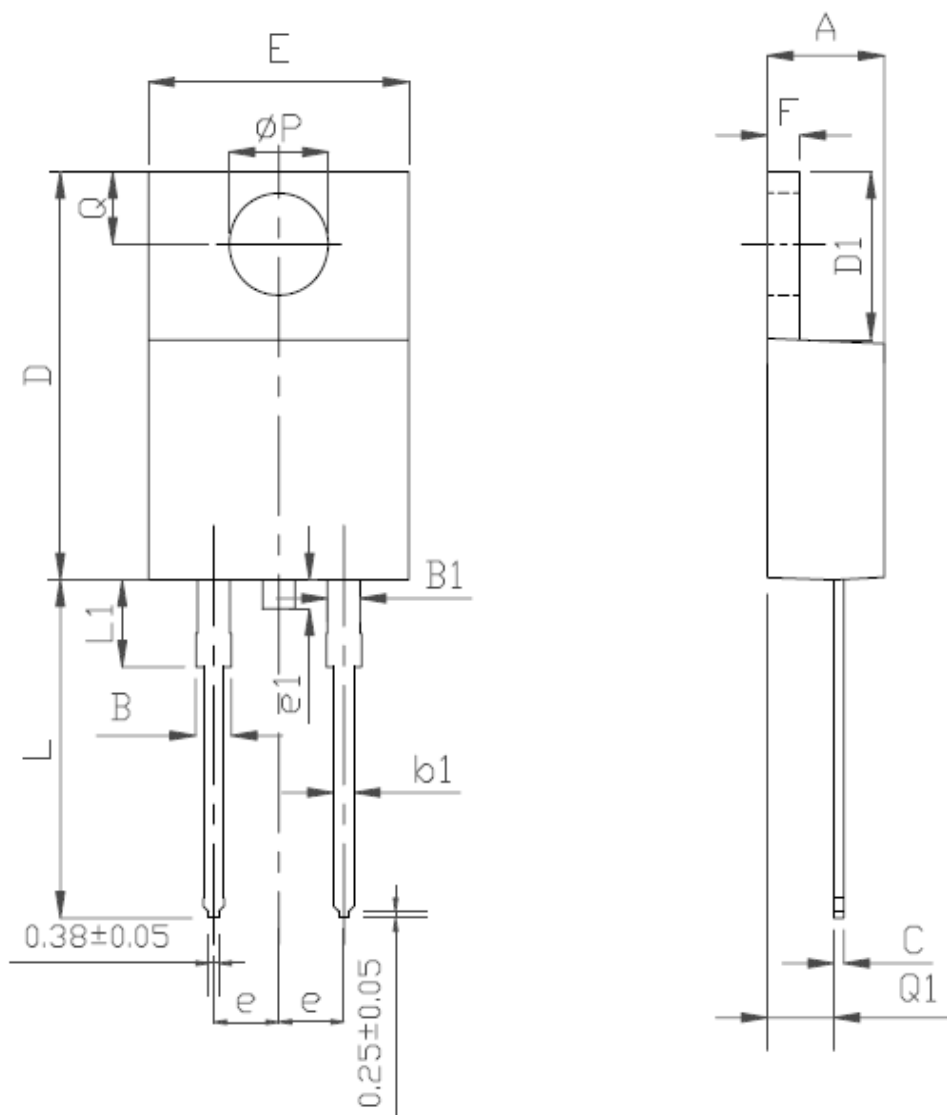
Current Derating



» TO-220 Package Dimensions

Unit: mm

Symbol	Min	Nom	Max	Symbol	Min	Nom	Max
A	4		4.8	e		2.54	
B	1.2		1.4	e1	1		1.5
B1	1		1.4	F	1.1		1.4
b1	0.65		1	L	12.5		14.5
c	0.4		0.55	LI	3	3.5	4
D	15		16.5	ΦP		3.8	
D1	5.9		6.9	Q	2.5		3
E	9.9		10.7	Q1	2		2.9





TO-220F Package Dimensions

Unit: mm

Symbol	Min	Nom	Max	Symbol	Min	Nom	Max
A	4.5		4.9	E1		7	
A1	2.3		2.9	e		2.54	
b	0.65		0.9	e1	1		1.5
b1	1.1		1.7	L	12.5		14.3
b2	1.2		1.4	L1	9.45		10.05
c	0.35		0.65	L2	15		16
D	14.5		17	L3	3.2		4.4
D1	6.1		6.9	ΦP	3		3.3
E	9.6		10.3	Q	2.5		2.9

