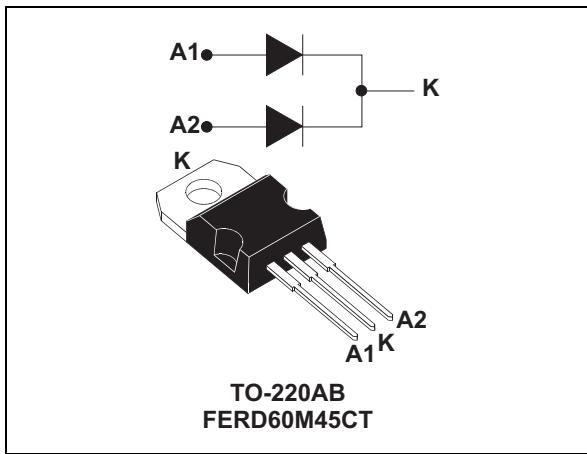


Field effect rectifier

Datasheet - production data



Description

This dual rectifier is based on a proprietary technology that achieves the best in class V_F/I_R for a given silicon surface.

Packaged in TO-220AB this device is intended to be used in switch mode power supplies, or automotive applications

Table 1. Device summary

$I_{F(AV)}$	2 x 30 A
V_{RRM}	45 V
$V_F(\text{typ})$	0.39 V

Features

- ST advanced rectifier process
- Stable leakage current over reverse voltage
- Low forward voltage drop
- High frequency operation

1 Characteristics

Table 2. Absolute ratings (limiting values, per diode at 25° C, unless otherwise stated)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			45	V
I _{F(RMS)}	Forward rms current			60	A
I _{F(AV)}	Average forward current, $\delta = 0.5$	T _c = 135° C T _c = 120° C	Per diode Per device	30 60	A
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal		275	A
T _{stg}	Storage temperature range			-65 to + 175	°C
T _j	Maximum operating junction temperature ⁽¹⁾			175	°C

1. $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistances

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	Per diode Total	1.6 1.1	°C/W
R _{th(c)}	Coupling		0.5	°C/W

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j(\text{diode 1}) = P(\text{diode1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode2}) \times R_{th(c)}.$$

Table 4. Static electrical characteristics (per diode)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I _R ⁽¹⁾	Reverse leakage current	T _j = 25° C	V _R = V _{RRM}			550	µA
		T _j = 125° C			25	50	mA
V _F ⁽²⁾	Forward voltage drop	T _j = 25° C	I _F = 15 A		0.41	0.45	V
		T _j = 125° C			0.39	0.425	
		T _j = 25° C	I _F = 30 A		0.51	0.55	
		T _j = 125° C			0.54	0.59	

1. Pulse test: t_p = 5 ms, $\delta < 2\%$

2. Pulse test: t_p = 380 µs, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.39 \times I_{F(AV)} + 0.0067 I_{F(RMS)}^2$$

3 Ordering Information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
FERD60M45CT	FERD60M45CT	TO-220AB	2.2 g	50	Tube