

MEA 300-06 DA, 600V  
 MEK 300-06 DA, 600V  
 MEE 300-06 DA, 600V

# WESTCODE

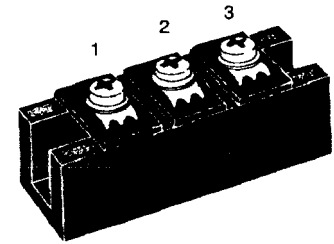
## Fast Recovery Epitaxial Diode (FRED) Module

MEA 300-06 DA  
 MEK 300-06 DA  
 MEE 300-06 DA

$V_{RRM} = 600\text{ V}$   
 $I_{FAVM} = 304\text{ A}$   
 $t_{rr} = 250\text{ ns}$

Preliminary data

$V_{RSM}$ V	$V_{FRM}$ V	Type	MEA 300-06DA	MEK 300-06DA	MEE 300-06DA
600	600				



Symbol	Test Conditions	Maximum Ratings
$I_{FRMS}$	$T_C = 75\text{ }^\circ\text{C}$	430 A
$I_{FAVM}$ ①	$T_C = 75\text{ }^\circ\text{C}$ ; rectangular, $d = 0.5$	304 A
$I_{FRM}$	$t_p < 10\text{ }\mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	1640 A
$I_{FSM}$	$T_{VJ} = 45\text{ }^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine	2400 A
	$t = 8.3\text{ ms}$ (60 Hz), sine	2640 A
$Pt$	$T_{VJ} = 45\text{ }^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine	28800 A <sup>2</sup> s
	$t = 8.3\text{ ms}$ (60 Hz), sine	29300 A <sup>2</sup> s
$Pt$	$T_{VJ} = 150\text{ }^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine	2160 A
	$t = 8.3\text{ ms}$ (60 Hz), sine	2380 A
$T_{VJ}$		-40...+150 $^\circ\text{C}$
$T_{stg}$		-40...+125 $^\circ\text{C}$
$T_{Smax}$		110 $^\circ\text{C}$
$P_{tot}$	$T_C = 25\text{ }^\circ\text{C}$	875 W
$V_{ISOL}$	50/60 Hz, RMS $t = 1\text{ min}$	3000 V~
	$I_{ISOL} \leq 1\text{ mA}$ $t = 1\text{ s}$	3600 V~
$M_d$	Mounting torque (M6)	2.25-2.75/20-25 Nm/lb.in.
	Terminal connection torque (M6)	4.50-5.50/40-48 Nm/lb.in.
$d_s$	Creeping distance on surface	12.7 mm
$d_A$	Strike distance through air	9.6 mm
$a$	Maximum allowable acceleration	50 m/s <sup>2</sup>
Weight		150 g

### Features

- International standard package with DCB ceramic base plate
- Planar passivated chips
- Short recovery time
- Low switching losses
- Soft recovery behaviour
- Isolation voltage 3600 V~
- UL registered E157027

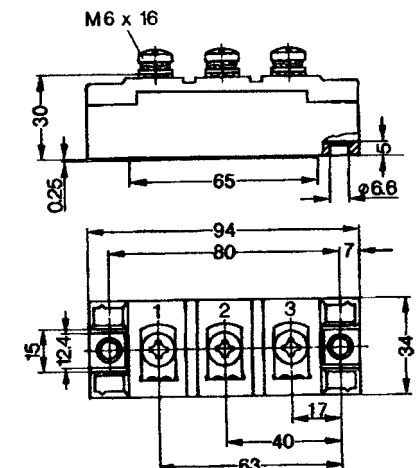
### Applications

- Antiparallel diode for high frequency switching devices
- Free wheeling diode in converters and motor control circuits
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

### Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses

### Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions	Characteristic Values (per diode)		
		typ.	max.	
$I_R$	$T_{VJ} = 25\text{ }^\circ\text{C}$ $V_R = V_{FRM}$		12 mA	
	$T_{VJ} = 25\text{ }^\circ\text{C}$ $V_R = 0.8 \cdot V_{FRM}$		3 mA	
	$T_{VJ} = 125\text{ }^\circ\text{C}$ $V_R = 0.8 \cdot V_{FRM}$		80 mA	
$V_F$	$I_F = 150\text{ A}$ ; $T_{VJ} = 125\text{ }^\circ\text{C}$		1.05 V	
	$T_{VJ} = 25\text{ }^\circ\text{C}$		1.27 V	
	$I_F = 260\text{ A}$ ; $T_{VJ} = 125\text{ }^\circ\text{C}$		1.19 V	
	$T_{VJ} = 25\text{ }^\circ\text{C}$		1.36 V	
$V_{TO}$	For power-loss calculations only		0.85 V	
$r_T$			1.34 m $\Omega$	
$R_{thJS}$	DC current		0.228 K/W	
$R_{thJC}$	DC current		0.143 K/W	
$t_{rr}$	$I_F = 300\text{ A}$ $V_R = 300\text{ V}$ $-di/dt = 400\text{ A}/\mu\text{s}$	250	$T_{VJ} = 100\text{ }^\circ\text{C}$	300 ns
			$T_{VJ} = 25\text{ }^\circ\text{C}$	44 A
			$T_{VJ} = 100\text{ }^\circ\text{C}$	66 A

①  $I_{FAVM}$  rating includes reverse blocking losses at  $T_{VJM}$ ,  $V_R = 0.6 V_{FRM}$ , duty cycle  $d = 0.5$   
 Data according to IEC 60747

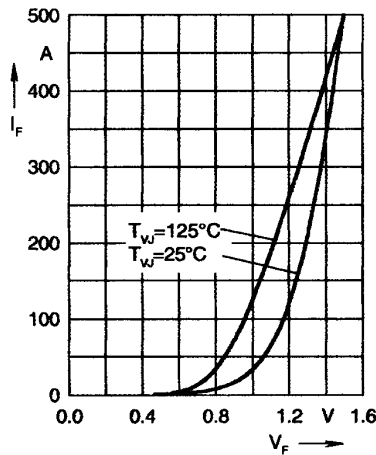


Fig. 1 Forward current  $I_F$  versus max. voltage drop  $V_F$  per leg

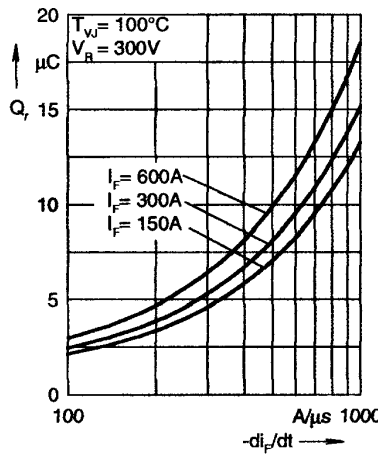


Fig. 2 Typ. reverse recovery charge  $Q_r$  versus  $-di_F/dt$

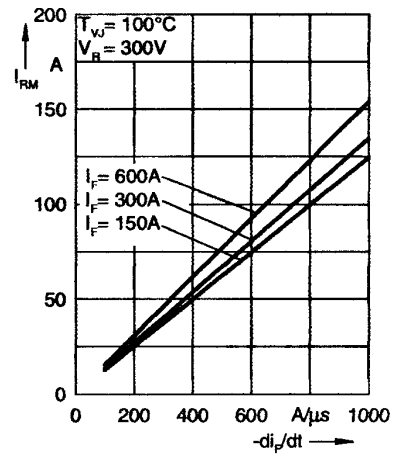


Fig. 3 Typ. peak reverse current  $I_{RM}$  versus  $-di_F/dt$

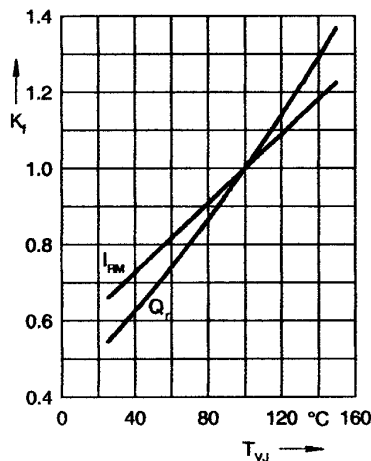


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus junction temperature  $T_{Wj}$

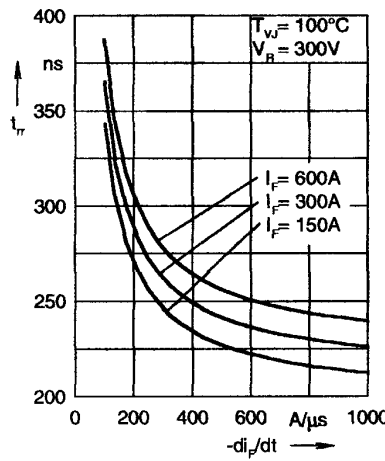


Fig. 5 Typ. recovery time  $t_{tr}$  versus  $-di_F/dt$

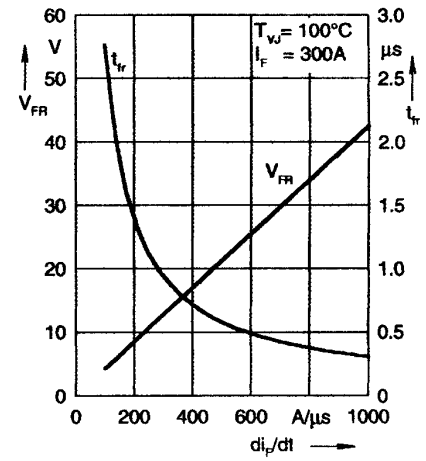


Fig. 6 Typ. peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

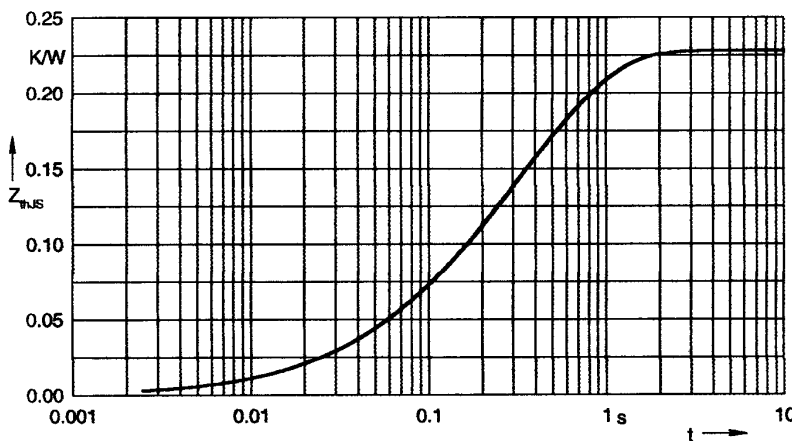


Fig. 7 Transient thermal impedance junction to heatsink

Constants for  $Z_{THUS}$  calculation:

i	$R_{TH}$ (K/W)	$t_i$ (s)
1	0.002	0.08
2	0.008	0.024
3	0.054	0.112
4	0.164	0.464

UK: Westcode Semiconductors Ltd  
 P O Box 57 Chippenham Wiltshire England SN15 1JL  
 Tel: +44 (0)1249 444524 Fax: +44 (0)1249 659448  
 E-Mail: WSL.sales@westcode.com

USA: Westcode Semiconductors Inc  
 3270 Cherry Avenue Long Beach California 90807  
 Tel: 562 595 6971 Fax: 562 595 8182  
 E-Mail: WSI.sales@westcode.com

In the interest of product improvement, Westcode reserves the right to change specifications at any time without notice.