

**PRELIMINARY**  
 Notice: This is not a final specification.  
 Some parametric limits are subject to change.

MITSUBISHI POWER MOSFET

# FL12KM-7A

HIGH-SPEED SWITCHING USE  
 Nch POWER MOSFET

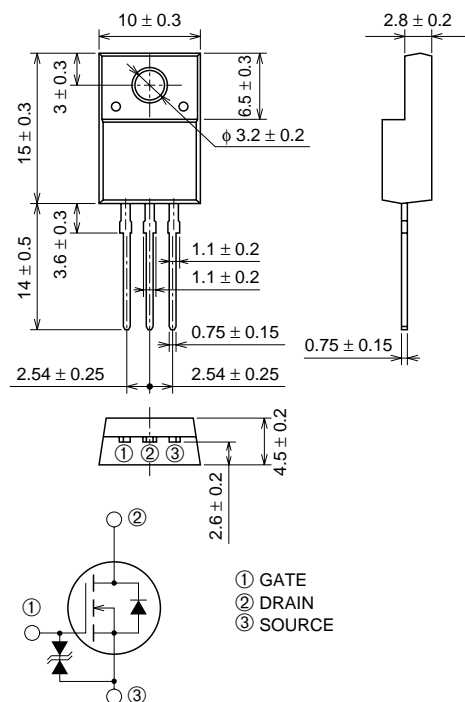
## FL12KM-7A



- 10V DRIVE
- $V_{DS}$  ..... 350V
- $r_{DS(ON)} (MAX)$  .....  $0.4\Omega$
- $I_D$  ..... 7A
- $V_{iso}$  ..... 2000V

## OUTLINE DRAWING

Dimensions in mm



TO-220FN

## APPLICATION

Inverter type fluorescent light sets, SMPS

## MAXIMUM RATINGS ( $T_c = 25^\circ\text{C}$ )

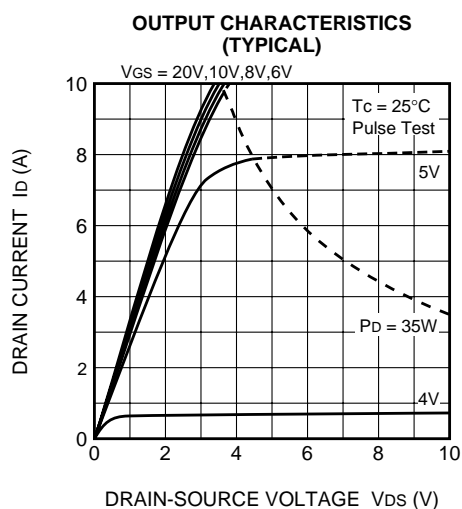
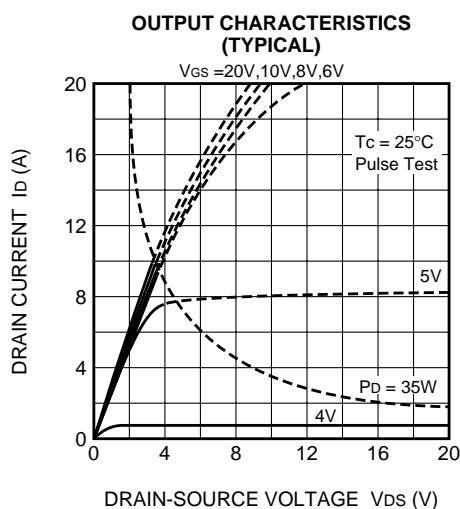
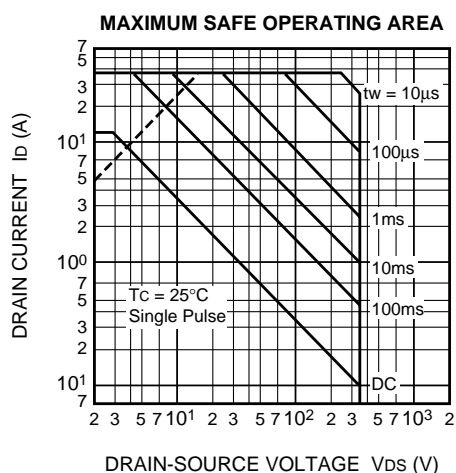
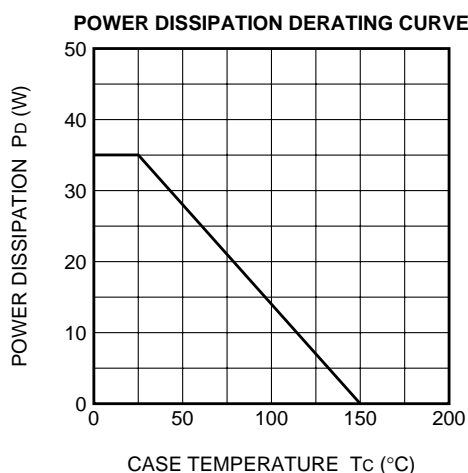
Symbol	Parameter	Conditions	Ratings	Unit
$V_{DS}$	Drain-source voltage	$V_{GS} = 0V$	350	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 30$	V
$I_D$	Drain current		12	A
$I_{DM}$	Drain current (Pulsed)		36	A
$I_{DA}$	Avalanche current (Pulsed)	$L = 200\mu H$	12	A
$P_D$	Maximum power dissipation		35	W
$T_{ch}$	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
$T_{stg}$	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
$V_{iso}$	Isolation voltage	AC for 1minute, Terminal to case	2000	V
—	Weight	Typical value	2.0	g

Aug. 1999

**ELECTRICAL CHARACTERISTICS** ( $T_{ch} = 25^{\circ}\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 1\text{mA}$ , $V_{GS} = 0\text{V}$	350	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	$I_{GS} = \pm 100\mu\text{A}$ , $V_{DS} = 0\text{V}$	$\pm 30$	—	—	V
$I_{GSS}$	Gate-source leakage current	$V_{GS} = \pm 25\text{V}$ , $V_{DS} = 0\text{V}$	—	—	$\pm 10$	$\mu\text{A}$
$I_{DSS}$	Drain-source leakage current	$V_{DS} = 350\text{V}$ , $V_{GS} = 0\text{V}$	—	—	1.0	mA
$V_{GS(th)}$	Gate-source threshold voltage	$I_D = 1\text{mA}$ , $V_{DS} = 10\text{V}$	2.0	3.0	4.0	V
$r_{DS(on)}$	Drain-source on-state resistance	$I_D = 6\text{A}$ , $V_{GS} = 10\text{V}$	—	0.32	0.40	$\Omega$
$V_{DS(on)}$	Drain-source on-state voltage	$I_D = 6\text{A}$ , $V_{GS} = 10\text{V}$	—	1.90	2.40	V
$ y_{fs} $	Forward transfer admittance	$I_D = 6\text{A}$ , $V_{DS} = 10\text{V}$	—	10	—	S
$C_{iss}$	Input capacitance	$V_{DS} = 25\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$	—	1050	—	pF
$C_{oss}$	Output capacitance		—	150	—	pF
$C_{rss}$	Reverse transfer capacitance		—	25	—	pF
$t_d(on)$	Turn-on delay time	$V_{DD} = 150\text{V}$ , $I_D = 6\text{A}$ , $V_{GS} = 10\text{V}$ , $R_{GEN} = R_{GS} = 50\Omega$	—	20	—	ns
$t_r$	Rise time		—	30	—	ns
$t_d(off)$	Turn-off delay time		—	160	—	ns
$t_f$	Fall time		—	60	—	ns
$V_{SD}$	Source-drain voltage	$I_S = 6\text{A}$ , $V_{GS} = 0\text{V}$	—	1.5	2.0	V
$R_{th(ch-c)}$	Thermal resistance	Channel to case	—	—	3.57	$^{\circ}\text{C/W}$

**PERFORMANCE CURVES**

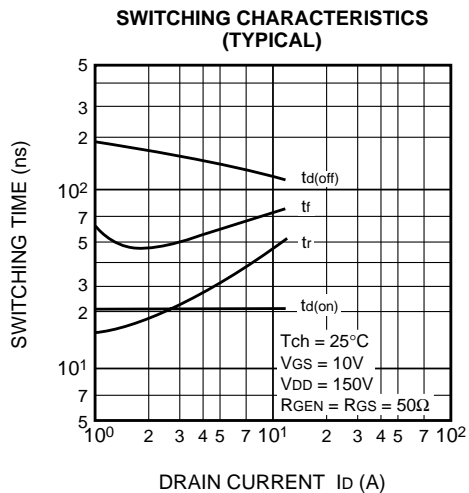
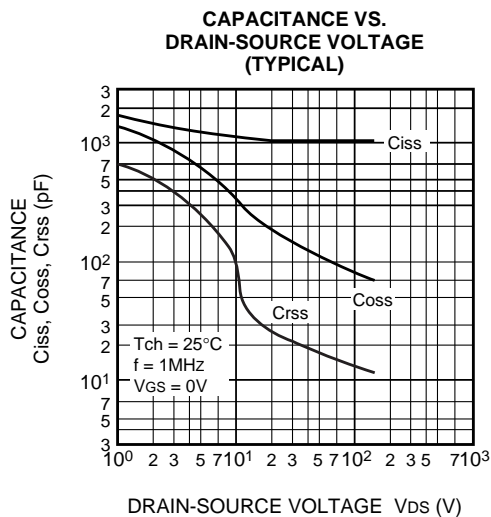
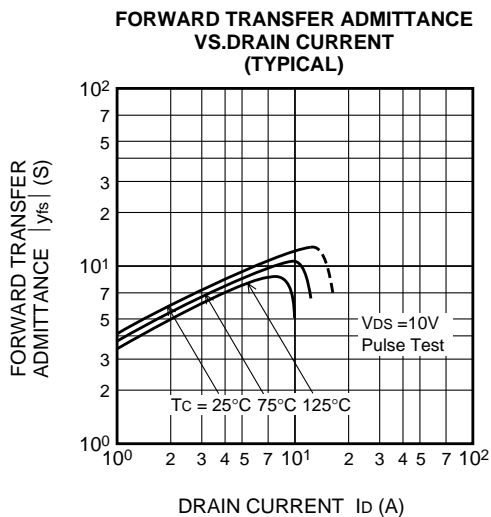
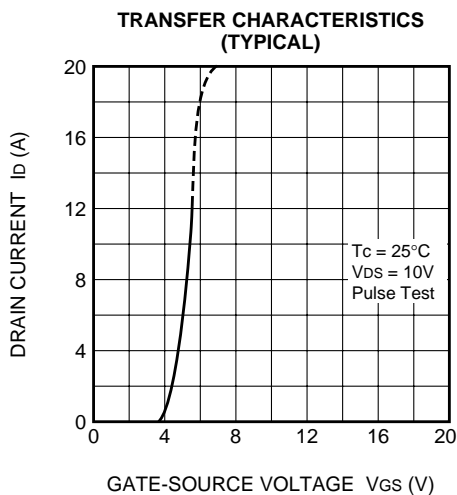
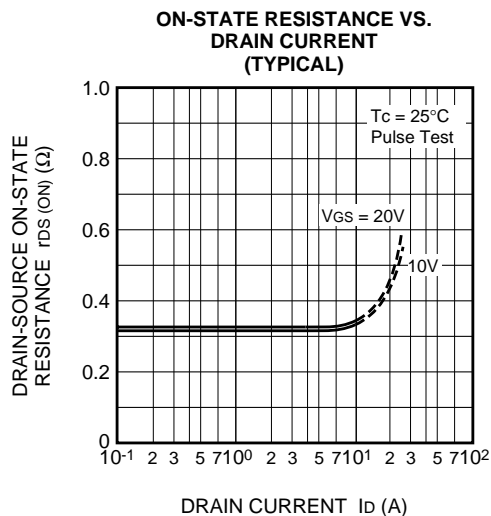
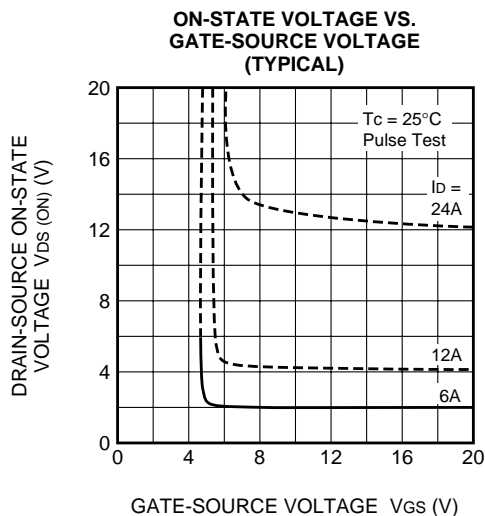


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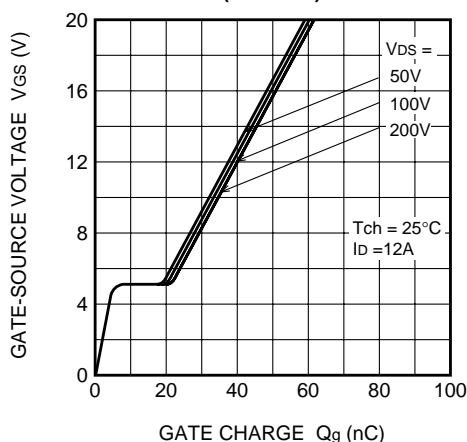
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**FL12KM-7A**

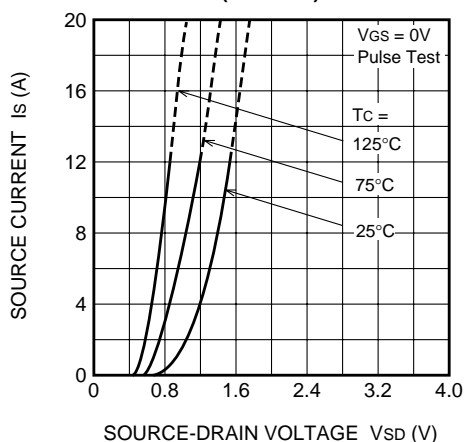
**HIGH-SPEED SWITCHING USE**  
**Nch POWER MOSFET**



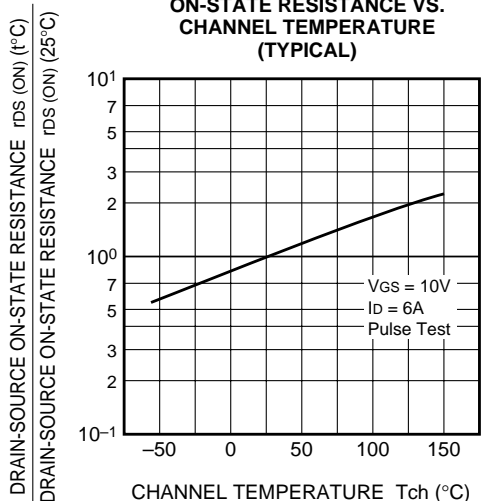
**GATE-SOURCE VOLTAGE  
 VS. GATE CHARGE  
 (TYPICAL)**



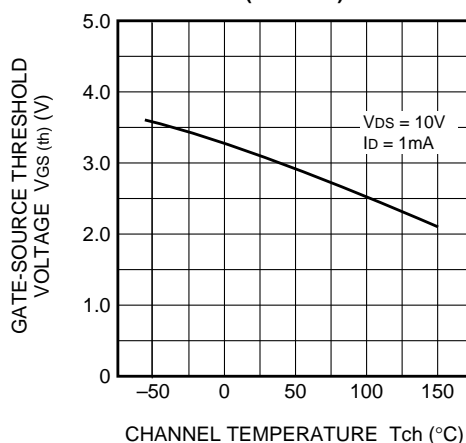
**SOURCE-DRAIN DIODE  
 FORWARD CHARACTERISTICS  
 (TYPICAL)**



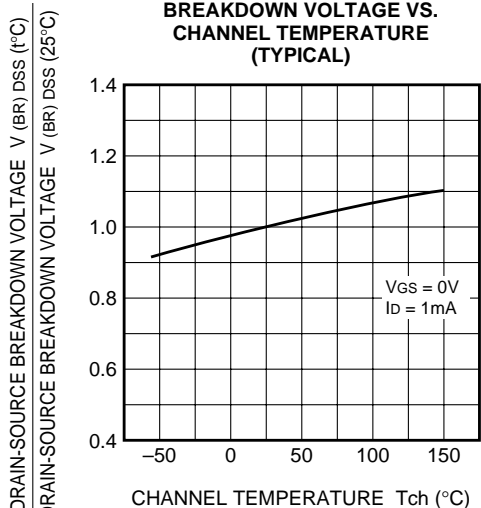
**ON-STATE RESISTANCE VS.  
 CHANNEL TEMPERATURE  
 (TYPICAL)**



**THRESHOLD VOLTAGE VS.  
 CHANNEL TEMPERATURE  
 (TYPICAL)**



**BREAKDOWN VOLTAGE VS.  
 CHANNEL TEMPERATURE  
 (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE  
 CHARACTERISTICS**

