

TECHNICAL DATA  
DATA SHEET 359, REV. A  
Formerly Part Number -- SHD22512

## HERMETIC POWER MOSFET N-CHANNEL

DESCRIPTION: A 500 VOLT, 0.415 OHM, 12A MOSFET IN A HERMETIC TO-254 PACKAGE.  
Electrically Equivalent to IRFC450

### MAXIMUM RATINGS

ALL RATINGS ARE AT  $T_A = 25^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED.

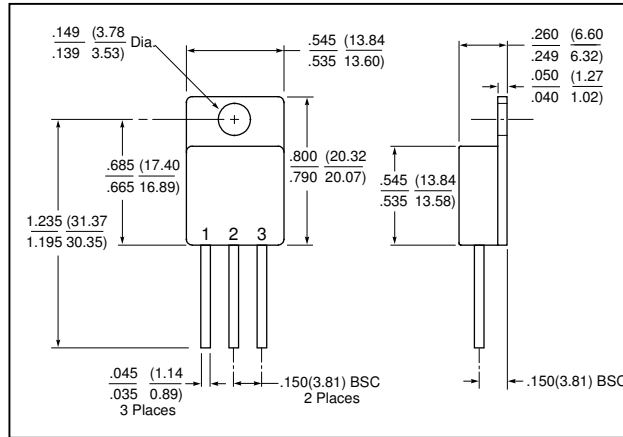
RATING	SYMBOL	MIN.	TYP.	MAX.	UNITS
GATE TO SOURCE VOLTAGE	$V_{GS}$	-	-	$\pm 20$	Volts
CONTINUOUS DRAIN CURRENT @ $T_C = 25^\circ\text{C}$	$I_D$	-	-	12	Amps
PULSED DRAIN CURRENT @ $T_C = 25^\circ\text{C}$	$I_{DM}$	-	-	48	Amps(pk)
OPERATING AND STORAGE TEMPERATURE	$T_{OP}/T_{STG}$	-55	-	+150	$^\circ\text{C}$
TERMAL RESISTANCE JUNCTION TO CASE	$R_{\theta JC}$	-	-	0.83	$^\circ\text{C/W}$
TOTAL DEVICE DISSIPATION @ $T_C = 25^\circ\text{C}$	$P_D$	-	-	150	Watts

### ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNITS
DRAIN TO SOURCE BREAKDOWN VOLTAGE $V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	$BV_{DSS}$	500	-	-	Volts
GATE THRESHOLD VOLTAGE $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	$V_{GS(TH)}$	2.0	-	4.0	Volts
DRAIN TO SOURCE ON STATE RESISTANCE $V_{GS} = 10\text{Vdc}, I_D = 8.0\text{A}$ PULSE TEST, $t \leq 300 \mu\text{s}$ , DUTY CYCLE $d \leq 2\%$	$R_{DS(ON)}$	-	-	0.415	$\Omega$
ZERO GATE VOLTAGE DRAIN CURRENT $V_{DS} = \text{Max. Rating}, V_{GS} = 0\text{Vdc}$ $V_{DS} = 0.8 \times \text{Max. Rating}$ $V_{GS} = 0\text{Vdc}, T_J = 125^\circ\text{C}$	$I_{DSS}$	-	-	25	$\mu\text{A}$
GATE TO BODY LEAKAGE CURRENT $V_{GS} = \pm 20\text{Vdc}$	$I_{GSS}$	-	-	$\pm 100$	nA
TOTAL GATE CHARGE $V_{GS} = 10 \text{Vdc}$	$Q_g$	55	-	120	nC
GATE TO SOURCE CHARGE $V_{DS} = 0.5\text{V Max. Rating}$	$Q_{gs}$	5.0	-	19	
GATE TO DRAIN CHARGE $I_D = 12\text{A}$	$Q_{gd}$	27	-	70	
TURN ON DELAY TIME $V_{DD} = 250\text{V}, I_D = 12\text{A}$	$t_{d(ON)}$	-	-	35	nsec
RISE TIME	$t_r$	-	-	190	
TURN OFF DELAY TIME $R_G = 2.35\Omega$	$t_{d(OFF)}$	-	-	170	
FALL TIME	$t_f$	-	-	130	
FORWARD VOLTAGE $I_S = 12\text{A}, V_{GS} = 0\text{V}$ PULSE TEST, $t \leq 300 \mu\text{s}$ , DUTY CYCLE $d \leq 2\%$	$V_{SD}$	-	-	1.7	Volts
REVERSE RECOVERY TIME $I_F = 12\text{A}$	$t_{rr}$	-	-	1600	nsec
REVERSE RECOVERY CHARGE $di/dt = 100\text{A}/\mu\text{sec}$ $V_{DD} \leq 50\text{V}$	$Q_{rr}$	-	-	14	$\mu\text{C}$
INPUT CAPACITANCE $V_{DS} = 25 \text{Vdc}$	$C_{iss}$	-	2700	-	pF
OUTPUT CAPACITANCE $V_{GS} = 0 \text{Vdc}$	$C_{oss}$	-	600	-	
REVERSE TRANSFER CAPACITANCE $f = 1 \text{MHz}$	$C_{rss}$	-	240	-	
DRAIN TO CASE CAPACITANCE	$C_{DC}$	-	12	-	

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**MECHANICAL DIMENSIONS: in Inches / mm**



**TO-254**

**PINOUT TABLE**

DEVICE TYPE	PIN 1	PIN 2	PIN 3
MOSFET, TO-254 PACKAGE	DRAIN	SOURCE	GATE

**TECHNICAL DATA**

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