

GR40MT12K

1200 V SiC MOSFET



Silicon Carbide Power MOSFET

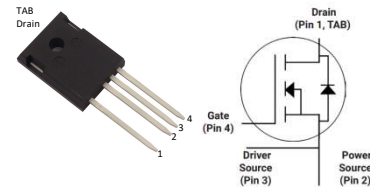
N-Channel Enhancement Mode

V_{DS}	=	1200 V
$I_D @ 25^\circ\text{C}$	=	62 A
$R_{DS(ON)}$	=	40 mΩ

Features

- Optimized package with separate driver source pin
- 150 °C Maximum Operating Temperature
- High blocking voltage with low On-resistance
- Low output capacitance and gate charge
- Normally-OFF operation at all temperatures
- Halogen free, RoHS compliant

Package



TO-247-4L



Advantages

- Reduced switching losses and minimum gate ringing
- High system efficiency
- Increased power density
- Increased system switching frequency

Applications

- EV Battery Chargers
- Switched-Mode Power Supply (SMPS)
- Solar Inverters
- Renewable Energy
- Motor Drives
- Induction Heating
- Uninterruptible Power Supply (UPS)

Maximum Ratings at $T_C = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Drain - Source Voltage	V_{DSmax}	$V_{GS} = 0\text{ V}, I_D = 10\text{ }\mu\text{A}$	1200	V
Gate - Source Voltage (dynamic) ¹	V_{GSmax}	AC ($f > 1\text{ Hz}$)	-10/+25	V
Gate - Source Voltage (static) ²	V_{GSop}	Static	-5/+20	V
Operating Junction and Storage Temperature	T_J, T_{stg}		-55 to +150	°C

Electrical Characteristics at $T_C = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typical	Max.	
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\text{ }\mu\text{A}$	1200			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 5\text{ mA}$		2.6		V
		$V_{DS} = V_{GS}, I_D = 5\text{ mA}, T_J = 150^\circ\text{C}$		1.8		V
Drain - Source Leakage Current	I_{DSS}	$V_{DS} = 1200\text{ V}, V_{GS} = 0\text{ V}$		0.5		μA
		$V_{DS} = 1200\text{ V}, V_{GS} = 0\text{ V}, T_J = 150^\circ\text{C}$		5		μA
Gate - Source Leakage Current	I_{GSS}	$V_{GS} = 20\text{ V}, V_{DS} = 0\text{ V}$			100	nA
Drain - Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 20\text{ V}, I_D = 40\text{ A}$		40		mΩ
		$V_{GS} = 20\text{ V}, I_D = 40\text{ A}, T_J = 150^\circ\text{C}$		60		mΩ
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 1000\text{ V}$		1800		pF
Output Capacitance	C_{oss}	$f = 1\text{ MHz}$		140		pF
Reverse Transfer Capacitance	C_{rss}	$V_{AC} = 25\text{ mV}$		8		pF

Reverse Diode Characteristics at $T_C = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typical	Max.	
Diode Forward Voltage	V_{SD}	$V_{GS} = -4\text{ V}, I_D = 20\text{ A}$		3.3		V
		$V_{GS} = -4\text{ V}, I_D = 20\text{ A}, T_J = 150^\circ\text{C}$		3.1		V
Continuous Diode Forward Current	I_S	$V_{GS} = -4\text{ V}$			60	A