

## Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness
- Halogen Free, RoHS Compliant

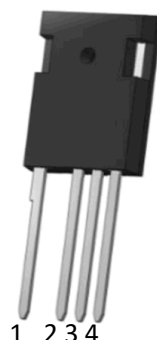
## Benefits

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

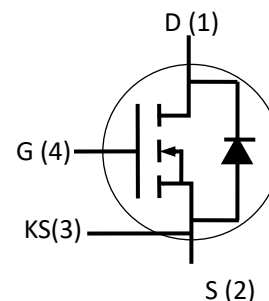
## Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power applications

## Package



TO-247-4



## Maximum Ratings ( $T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{DSmax}$	Drain - Source Voltage	1200	V	$V_{GS}=0V, I_D=100\mu A$	
$V_{GSmax}$	Gate - Source Voltage	-8/+22	V	Absolute maximum values	
$V_{GSop}$	Gate - Source Voltage	-5/+18	V	Recommended operational values	
$I_D$	Continuous Drain Current	30 20	A	$V_{GS}=18V, T_C=25^\circ\text{C}$ $V_{GS}=18V, T_C=100^\circ\text{C}$	
$I_{DM}$	Pulse Drain Current	80	A	Pulse width limited by $T_{jmax}$	
$P_D$	Power Dissipation	150	W	$T_C=25^\circ\text{C}, T_J=175^\circ\text{C}$	
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		

**Electrical Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	1200			V	$V_{GS}=0V, I_D=100\mu A$	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	3.2	4.5	V	$V_{GS}=V_{DS}, I_{DS}=5mA, T_C=25^\circ C$	
			2.0			$V_{GS}=V_{DS}, I_{DS}=5mA, T_C=175^\circ C$	
$I_{DSS}$	Zero Gate Voltage Drain Current		1	100	$\mu A$	$V_{DS}=1200V, V_{GS}=0V$	
$I_{GSS}$	Gate-Source Leakage Current		10	200	nA	$V_{GS}=18V, V_{DS}=0V$	
$R_{DS(on)}$	Drain-Source on-state Resistance		80	96	m $\Omega$	$V_{GS}=18V, I_D=20A, T_C=25^\circ C$	
			120		m $\Omega$	$V_{GS}=18V, I_D=20A, T_C=175^\circ C$	
$g_{fs}$	Transconductance		11.0		S	$V_{DS}=18V, I_D=20A, T_J=25^\circ C$	
			10.5		S	$V_{DS}=18V, I_D=20A, T_J=175^\circ C$	
$C_{iss}$	Input Capacitance		1100		pF	$V_{GS}=0V, V_{DS}=1000V, f=1MHz, V_{AC}=25mV$	
$C_{oss}$	Output Capacitance		56				
$C_{rss}$	Reverse Transfer Capacitance		15				
$E_{ON}$	Turn-On Switching Energy		450		$\mu J$	$V_{DS}=800V, V_{GS}=-5/18V, I_D=20A, R_{G(ext)}=0\Omega, L=160\mu H$	
$E_{OFF}$	Turn-Off Switching Energy		110				
$t_{d(on)}$	Turn-On Delay Time		28		ns	$V_{DD}=800V, V_{GS}=-5/18V, I_D=20A, R_{G(ext)}=0\Omega, \text{Timing relative to } V_{DS}$	
$t_r$	Rise Time		65				
$t_{d(off)}$	Turn-Off Delay Time		24				
$t_f$	Fall Time		20				
$R_{G(int)}$	Internal Gate Resistance		6.0		$\Omega$	$f=1MHz, V_{AC}=25mV$	
$Q_{gs}$	Gate to Source Charge		21		nC	$V_{DD}=800V, V_{GS}=-5/18V, I_D=20A$	Fig. 10
$Q_{gd}$	Gate to Drain Charge		14				
$Q_g$	Total Gate Charge		75				

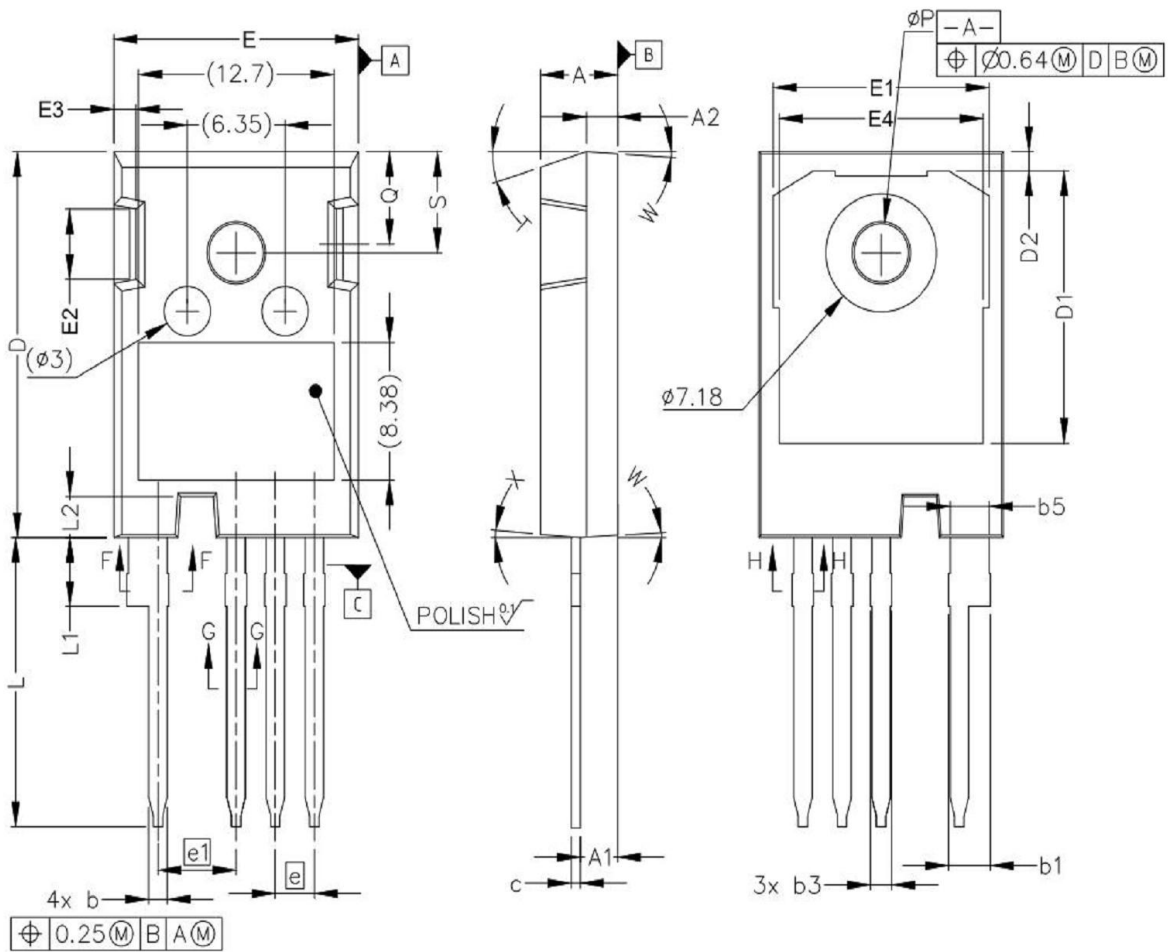
**Reverse Diode Characteristics**

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_{SD}$	Diode Forward Voltage	3.5		V	$V_{GS}=-5V, I_{SD}=10A, T_J=25^\circ C$	
		3.2		V	$V_{GS}=-5V, I_{SD}=10A, T_J=175^\circ C$	
$I_S$	Continuous Diode Forward Current		30	A	$T_C=25^\circ C$	
$t_{rr}$	Reverse Recovery time	16		ns	$V_{GS}=-5V, I_{SD}=20A, V_R=800V, \text{dif/dt}=1200A/\mu s;$	
$Q_{rr}$	Reverse Recovery Charge	75		nC		
$I_{rrm}$	Peak Reverse Recovery Current	6		A		

**Thermal Characteristics**

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.95	$^\circ C/W$		Fig. 12
$R_{\theta JA}$	Thermal Resistance From Junction to Ambient	35			

### Package Dimensions: TO-247-4L



SYMBOL	Mechanical Dimensions/mm			SYMBOL	Mechanical Dimensions/mm			SYMBOL	Mechanical Dimensions/mm		
	MIN	NOM	MAX						MIN	NOM	MAX
A	4.83	5.00	5.21	D	23.30	23.45	23.60	L1	3.97	4.13	4.37
A1	2.29	2.41	2.54	D1	16.25	16.55	17.65	$\phi P$	3.51	3.6	3.65
A2	1.91	2.00	2.16	E	15.75	15.90	16.13	W	-	3.5	-
b	1.07	1.20	1.33	E1	13.10	13.65	14.15	X	-	4	-
b1	2.39	2.60	2.94	E2	3.68	5.0	5.1	Q	5.49	5.8	6.0
b2	2.39	-	2.84	e	2.54			S	6.04	6.15	6.30
c	0.55	0.60	0.68	L	17.31	17.45	17.82	T	-	17.5	-

NOTE:  
 1.The plastic package is not marked as smooth surfaceRa=0.1;Subglossy surfaceRa=0.8  
 2.Undeclared tolerance  $\pm 0.15$ ,Unmarked filletRmax=0.25

NAME	TO-247-4L OUTLINE	UNIT	mm	DESIGNED	Shawn	THIRD ANGLE SYSTEM
DWGNO		PAGE	1 OF 1	CHECKED		
VERSION	Ver1.0	ISSUE DATE		APPROVED		

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