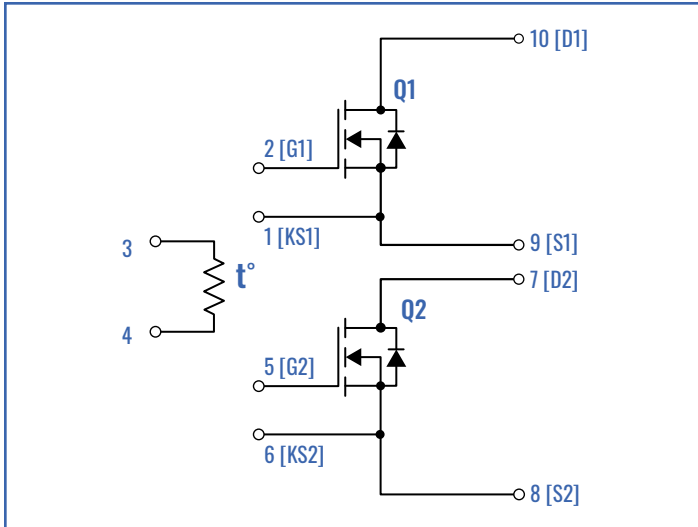


$$V_{DS} = 1200V$$

$$R_{DSon} = 8.6m\Omega$$

$$I_D = 120A @ T_c = 25^\circ C$$

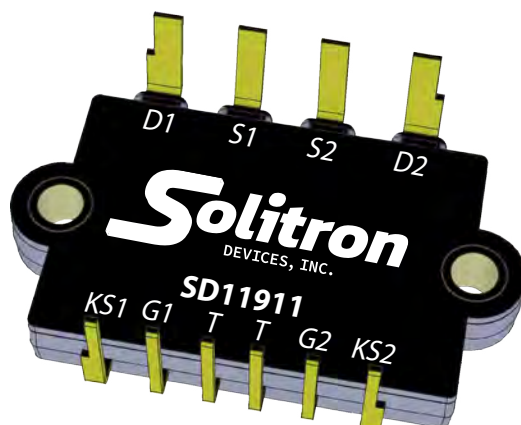


PIN CONNECTIONS

PIN	DESCRIPTION
1	KS1
2	G1
3	Temp. Monitoring
4	Temp. Monitoring
5	G2
6	KS2
7	D2
8	S2
9	S1
10	D1

FEATURES & BENEFITS

- SUPERIOR SYSTEM EFFICIENCY DUE TO LOW SWITCHING AND CONDUCTIONS LOSSES OF SiC
- OUTSTANDING POWER CONVERSION EFFICIENCY AT HIGH FREQUENCY OPERATION
- HIGH SPEED SWITCHING W/ LOW CAPACITANCE
- REDUCED PARASITIC INDUCTANCE AND CAPACITANCE
- REAL KELVIN SOURCE CONNECTION FOR STABLE GATE DRIVE
- ISOLATED BACKSIDE FOR DIRECT MOUNT TO HEATSINK
- ALN SUBSTRATE AND CUMO BASEPLATE FOR THERMAL CONDUCTIVITY
- HIGH JUNCTION TEMPERATURE OPERATION
- LOW JUNCTION TO CASE THERMAL RESISTANCE
- REDUCED THERMAL REQUIREMENTS AND SYSTEM COST
- INTEGRATED NTC TEMPERATURE SENSOR
- RUGGED MOUNTING DUE TO INTEGRATED MOUNTING BUSHINGS
- LOW PROFILE COMPACT PACKAGE



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

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE	UNIT
$V_{DS,max}$	Drain-Source Voltage		1200	V
V_{GS}	Gate-Source Voltage	DC	-20/+20	V
I_D	Continuous Drain Current		120	A
$I_{D,pulse}$	Pulsed Drain Current	Pulse Width t_p Limited by $T_{j,max}$	200	A
E_{AS}	Single Pulsed Avalanche Energy	$L = 15\text{mH}$, $I_{AS} = 8.6\text{A}$, starting $T_j = 25^\circ\text{C}$	550	mJ
$T_{j(max)}$	Maximum Junction Temperature		175	$^\circ\text{C}$
T_j, T_{STG}	Junction Temperature, Operating and Storage		-55 to 175	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS - STATIC ($T_c = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} < 0\text{V}$, $I_D = 1\text{mA}$	1200			V
I_{DSS}	Off-State Drain Current	$V_{GS} = 0\text{V}$, $V_{DS} = 1200\text{V}$, $T_j = 25^\circ\text{C}$		6	600	μA
		$V_{GS} = 0\text{V}$, $V_{DS} = 1200\text{V}$, $T_j = 175^\circ\text{C}$		65		
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$		5	± 20	μA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS} = 12\text{V}$, $I_D = 100\text{A}$, $T_j = 25^\circ\text{C}$		8.6	11	$\text{m}\Omega$
		$V_{GS} = 12\text{V}$, $I_D = 100\text{A}$, $T_j = 125^\circ\text{C}$		13.5		
		$V_{GS} = 12\text{V}$, $I_D = 100\text{A}$, $T_j = 175^\circ\text{C}$		18.2		
$V_{G(th)}$	Transconductance	$V_{DS} = 5\text{V}$, $I_D = 10\text{mA}$	4	4.7	6	V
R_G	Gate Resistance	$f = 1\text{MHz}$, open drain		0.8	1.5	Ω
G_{fs}	Transconductance	$V_{DS} = 5\text{V}$, $I_D = 50\text{A}$, $T_a = 25^\circ\text{C}$		208		S
		$V_{DS} = 5\text{V}$, $I_D = 50\text{A}$, $T_a = 175^\circ\text{C}$		135		

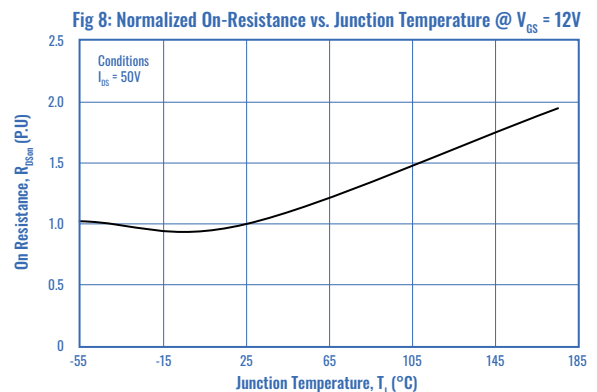
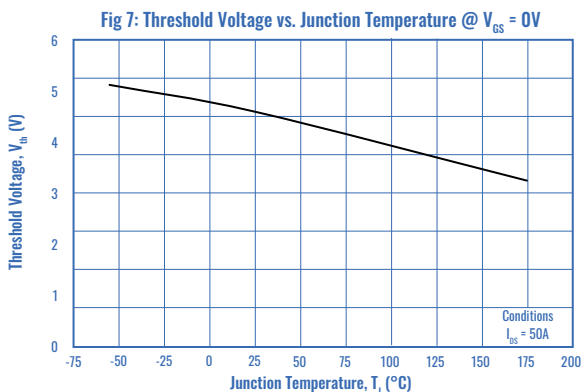
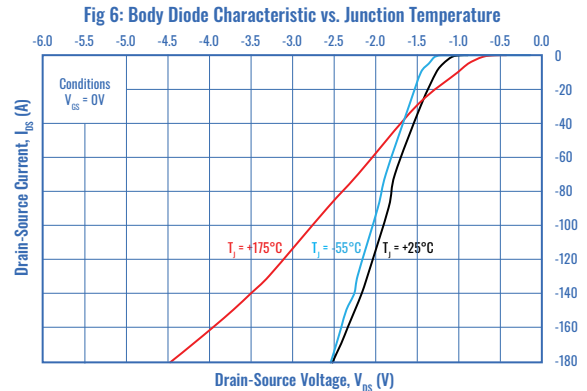
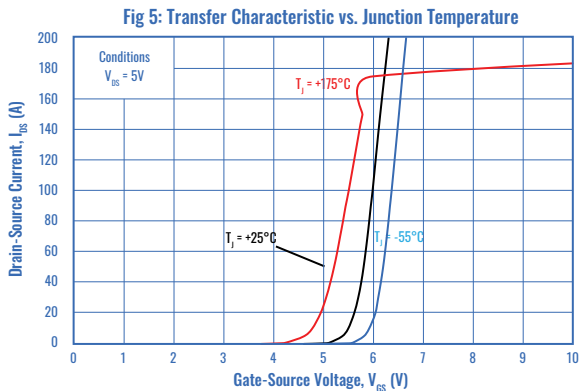
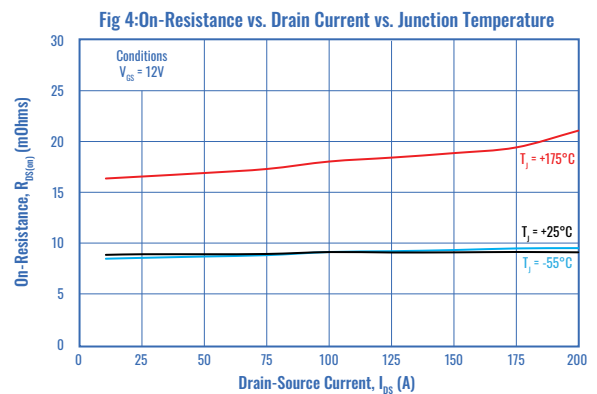
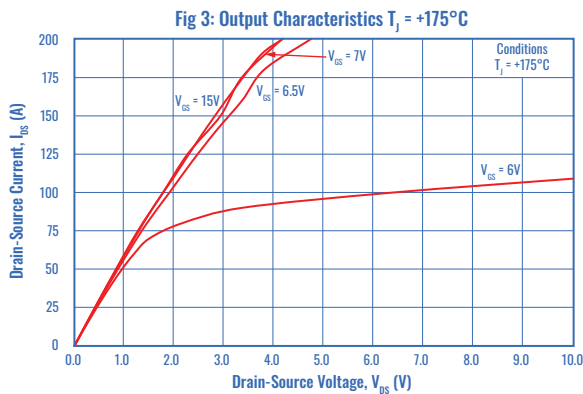
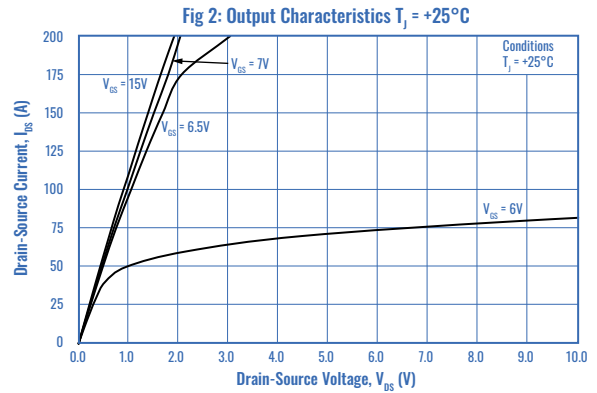
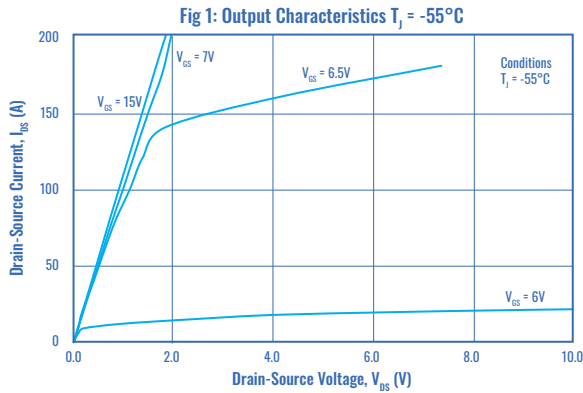
ELECTRICAL CHARACTERISTICS - REVERSE DIODE ($T_c = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_S	Diode Continuous Forward Current	$T_c < 110^\circ\text{C}$			120	A
$I_{S(pulse)}$	Diode Pulse Current				550	A
V_{FSD}	Forward Voltage	$V_{GS} = 0\text{V}$, $I_F = 100\text{A}$, $T_j = 25^\circ\text{C}$		1.65	2	V
		$V_{GS} = 0\text{V}$, $I_F = 100\text{A}$, $T_j = 175^\circ\text{C}$		2.4		
Q_{rr}	Reverse Recovery Charge	$V_R = 800\text{V}$, $I_F = 100\text{A}$, $V_{GS} = -5\text{V}$, $R_{G,EXT} = 22\ \Omega$, $di/dt = 3700\text{A}/\mu\text{V}$, $T_j = 25^\circ\text{C}$		1373		nC
		$V_R = 800\text{V}$, $I_F = 100\text{A}$, $V_{GS} = -5\text{V}$, $R_{G,EXT} = 22\ \Omega$, $di/dt = 3700\text{A}/\mu\text{V}$, $T_j = 150^\circ\text{C}$		1275		
t_{rr}	Reverse Recovery Time	$V_R = 800\text{V}$, $I_F = 100\text{A}$, $V_{GS} = -5\text{V}$, $R_{G,EXT} = 22\ \Omega$, $di/dt = 3700\text{A}/\mu\text{V}$, $T_j = 25^\circ\text{C}$		60		ns
		$V_R = 800\text{V}$, $I_F = 100\text{A}$, $V_{GS} = -5\text{V}$, $R_{G,EXT} = 22\ \Omega$, $di/dt = 3700\text{A}/\mu\text{V}$, $T_j = 150^\circ\text{C}$		60		

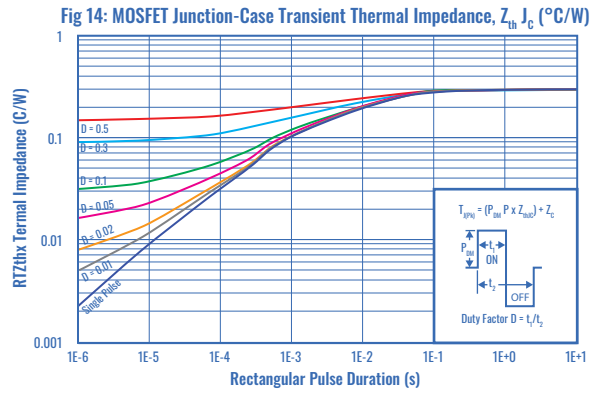
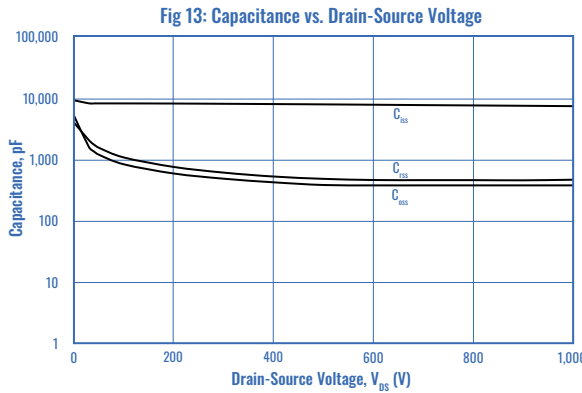
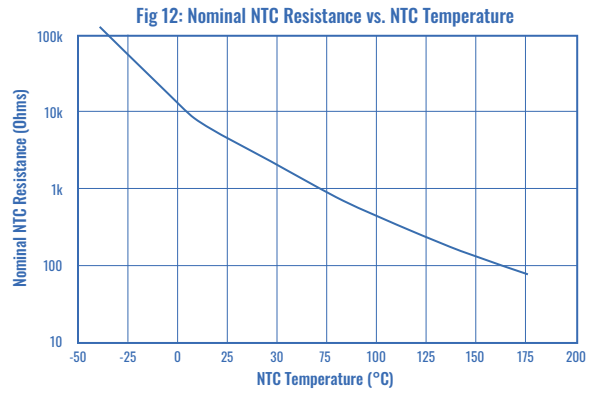
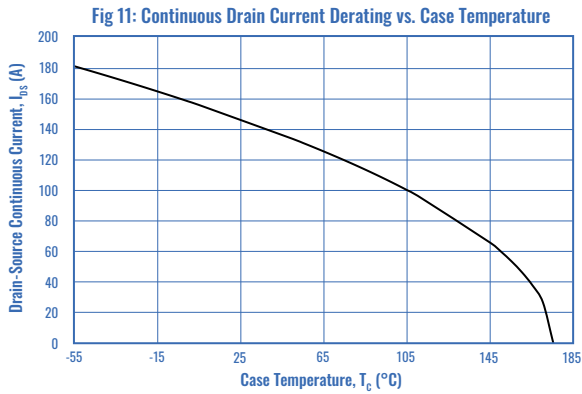
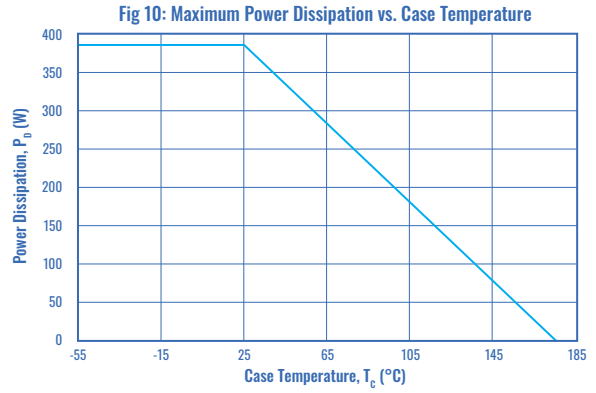
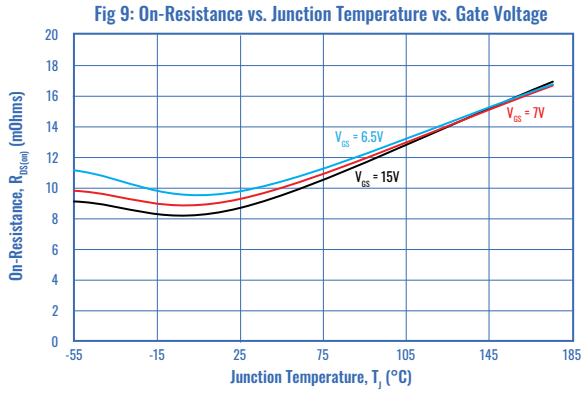
ELECTRICAL CHARACTERISTICS - DYNAMIC (T_c = 25°C)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
C _{iss}	Input Capacitance	V _{DS} = 100V, V _{GS} = 0V, f = 100kHz		8512		pF	
C _{oss}	Output Capacitance			755		pF	
C _{rss}	Reverse Transfer Capacitance			9		pF	
C _{oss(er)}	Effective Output Capacitance, Energy Related	V _{DS} = 0V to 800V, V _{GS} = 0V		395		pF	
C _{oss(tr)}	Effective Output Capacitance, Time Related			870		pF	
E _{oss}	C _{oss} Stored Energy			128		μJ	
Q _G	Total Gate Charge	V _{DS} = 800V, I _D = 100A, V _{GS} = -5V to 15V		234		nC	
Q _{GD}	Gate-Drain Charge			40		nC	
Q _{GS}	Gate-Source Charge			96		nC	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 800V, I _D = 100A Gate Driver = -5V to 15V Turn-on R _{G,EXT} = 1.5 Ω Turn-off R _{G,EXT} = 5 Ω Inductive Load FWD: same device with V _{GS} = -5V, R _G = 5 Ω, T _J = 25°C		32		ns	
t _r	Rise Time			58		ns	
t _{d(off)}	Turn-off Delay Time			113		ns	
t _f	Fall Time			16		ns	
E _{ON}	Turn-on Energy			3463		μJ	
E _{OFF}	Turn-off Energy			722		μJ	
E _{TOTAL}	Total Switching Energy			4185		μJ	
t _{d(on)}	Turn-on Delay Time		V _{DS} = 800V, I _D = 100A Gate Driver = -5V to 15V Turn-on R _{G,EXT} = 1.5 Ω Turn-off R _{G,EXT} = 5 Ω Inductive Load FWD: same device with V _{GS} = -5V, R _G = 5 Ω, T _J = 150°C		28		ns
t _r	Rise Time				66		ns
t _{d(off)}	Turn-off Delay Time				126		ns
t _f	Fall Time			16		ns	
E _{ON}	Turn-on Energy			3539		μJ	
E _{OFF}	Turn-off Energy			700		μJ	
E _{TOTAL}	Total Switching Energy			4239		μJ	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 800V, I _D = 100A Gate Driver = -5V to 15V Turn-on R _{G,EXT} = 1.5 Ω Turn-off R _{G,EXT} = 5 Ω Inductive Load FWD: UJ3D1250K, T _J = 25°C			33		ns
t _r	Rise Time				50		ns
t _{d(off)}	Turn-off Delay Time				113		ns
t _f	Fall Time			15		ns	
E _{ON}	Turn-on Energy			1895		μJ	
E _{OFF}	Turn-off Energy			680		μJ	
E _{TOTAL}	Total Switching Energy			2575		μJ	
t _{d(on)}	Turn-on Delay Time		V _{DS} = 800V, I _D = 100A Gate Driver = -5V to 15V Turn-on R _{G,EXT} = 1.5 Ω Turn-off R _{G,EXT} = 5 Ω Inductive Load FWD: UJ3D1250K, T _J = 150°C		33		ns
t _r	Rise Time				52		ns
t _{d(off)}	Turn-off Delay Time				127		ns
t _f	Fall Time			15		ns	
E _{ON}	Turn-on Energy			1989		μJ	
E _{OFF}	Turn-off Energy			595		μJ	
E _{TOTAL}	Total Switching Energy			2584		μJ	

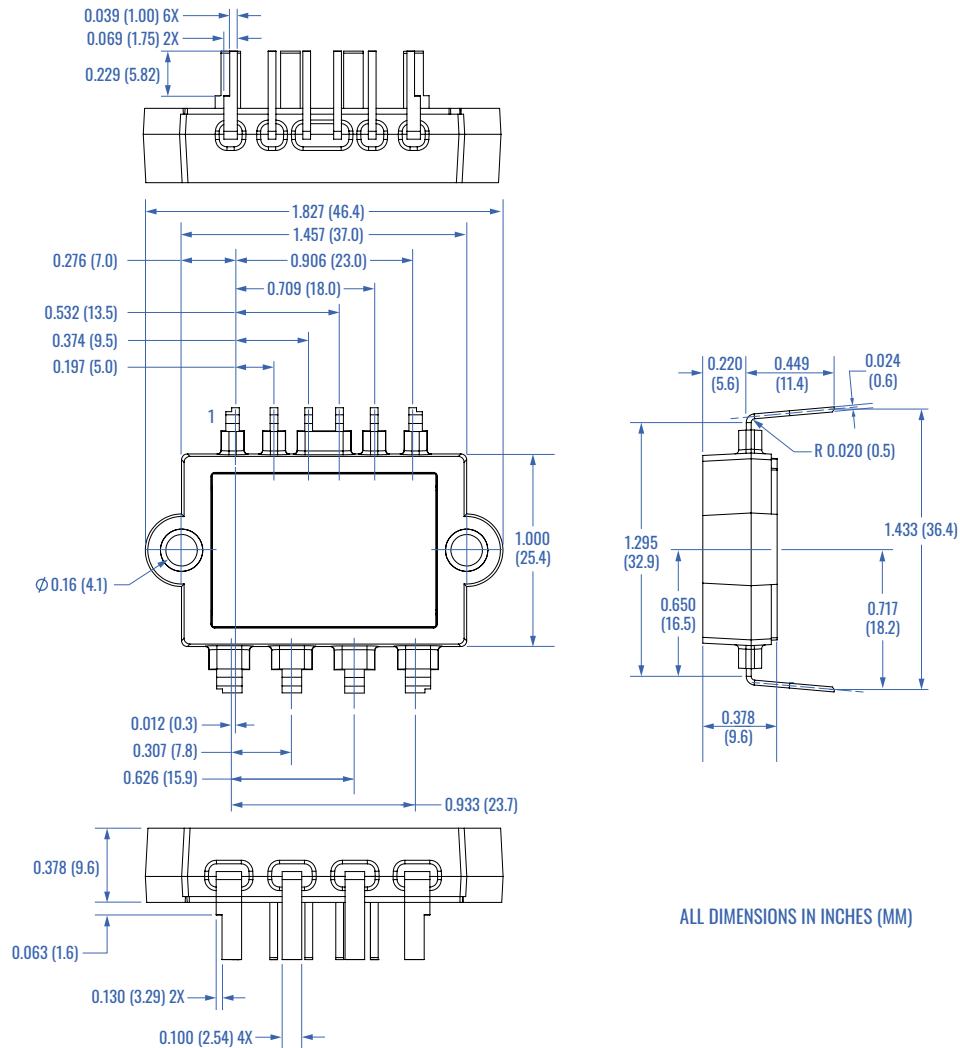
TYPICAL PERFORMANCE CHARACTERISTICS



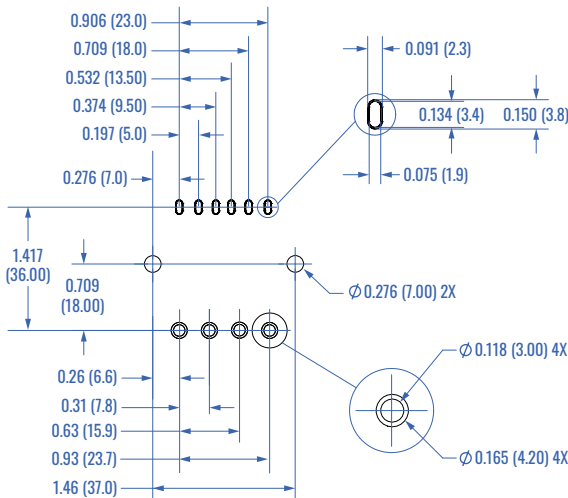
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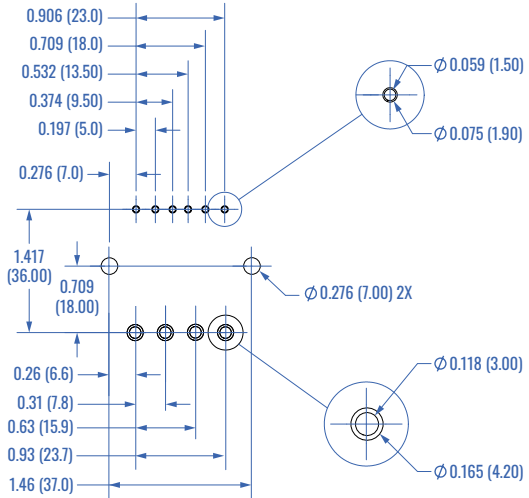
PACKAGE OUTLINE - dimensions in inches (mm)



PCB HOLE PATTERN



ALTERNATE PCB HOLE PATTERN



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