N-Ch and P-Ch Fast Switching MOSFET

V_{DS}=30V, I_D=3.5A, $R_{DS(ON)}$=75mΩ

V_{DS}=-30V, I_D=-2.7A, $R_{DS(ON)}$=135mΩ

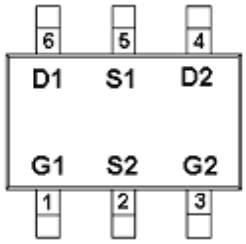
➢ General Description

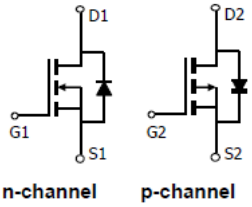
This PAC3002C N&P Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent Rds(On) performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

➢ Feature

- ●Super high density cell design for extremely low RDS (ON)
- ●Exceptional on-resistance and maximum DC current capability
- ●TSOP-6 package design

➢ TSOP-6





➢ Application

- ●Power Management in Note book
- ●Portable Equipment
- ●Battery Powered System
- ●DC/DC Converter
- ●Load Switch
- ●DSC
- ●LCD Display inverter

➢ Absolute Maximum Ratings

Parameter		Symbol	Rating		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DSS}	30	-30	V
Gate –Source Voltage		V_{GSS}	±20	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	3.5	-2.7	A
	T_A=70℃		2.6	-2.1	
Pulsed Drain Current		I_{DM}	-15	-15	A
Continuous Source Current(Diode Conduction)		I_S	-1.5	-1.5	A
Power Dissipation	T_A=25℃	P_D	2.0		W
	T_A=70℃		1.3		
Operating Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120		℃/W

N-Ch and P-Ch Fast Switching MOSFET

V_{DS}=30V, I_D=3.5A, $R_{DS(ON)}$=75mΩ

V_{DS}=-30V, I_D=-2.7A, $R_{DS(ON)}$=135mΩ

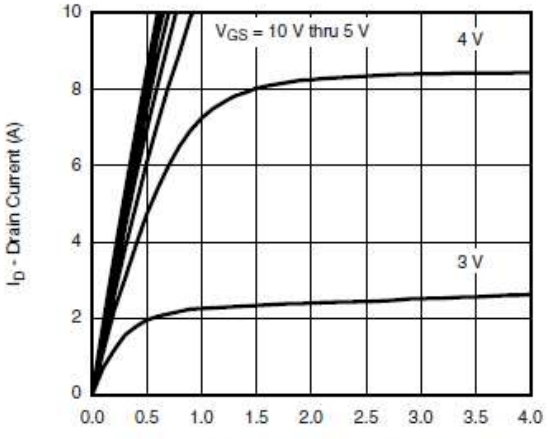
➢ N-Channel Electrical Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0		2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	uA
		V_{DS}=30V, V_{GS}=0V T_J=85℃			30	uA
On-State Drain Current	$I_{D(on)}$	V_{DS}≧4.5V, V_{GS}=10V	6			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=3.6A		64	75	mΩ
		V_{GS}=4.5V, I_D=2.6A		88	100	mΩ
Forward Transconductance	g_{FS}	V_{DS}=15V, I_D=2.8A		11		S
Diode Forward Voltage	V_{SD}	I_S=2.6A, V_{GS}=0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V, V_{GS}=4.5V I_D≡3.0A		2.0	3.6	nC
Gate-Source Charge	Q_{gs}			0.8		nC
Gate-Drain Charge	Q_{gd}			0.65		nC
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V f=1MHz		230		pF
Output Capacitance	C_{oss}			50		pF
Reverse Transfer Capacitance	C_{rss}			20		pF
Turn-On Time	$t_{d(on)}$	V_{DD}=15V, R_L=5.6Ω I_D≡2.0A, V_{GEN}=4.5V R_G=1Ω		10	12	ns
	t_r			45	60	ns
Turn-Off Time	$t_{d(off)}$			12	18	ns
	t_f			20	30	ns

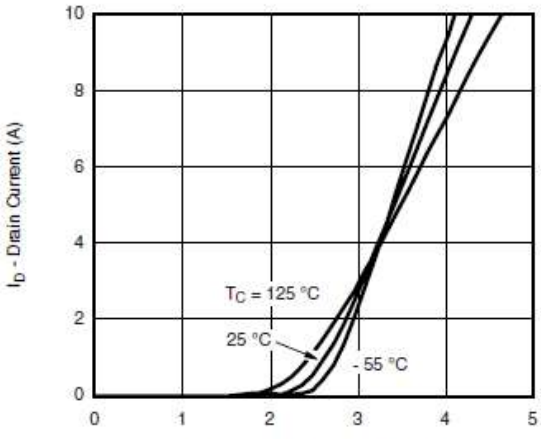
➢ P-Channel Electrical Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-1.0		-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	uA
		V_{DS}=-24V,V_{GS}=0V T_A=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≦-5V,V_{GS}=-10V	-10			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10.0V,I_D=-2.7A		115	135	mΩ
		V_{GS}=-4.5V,I_D=-2.1A		150	170	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-1.6A		10		S
Diode Forward Voltage	V_{SD}	I_S=-1.7A,V_{GS}=0V		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-4.5V I_D≡-1.6A		2.5		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.0		
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V f=1MHz		170		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			30		
Turn-On Time	$t_{d(on)}$	V_{DD}=-15V,R_L=7.5Ω I_D≡-1.6A,V_{GEN}=-10V R_G=1Ω		5	10	ns
	t_r			10	16	
Turn-Off Time	$t_{d(off)}$			10	16	
	t_f			5	10	

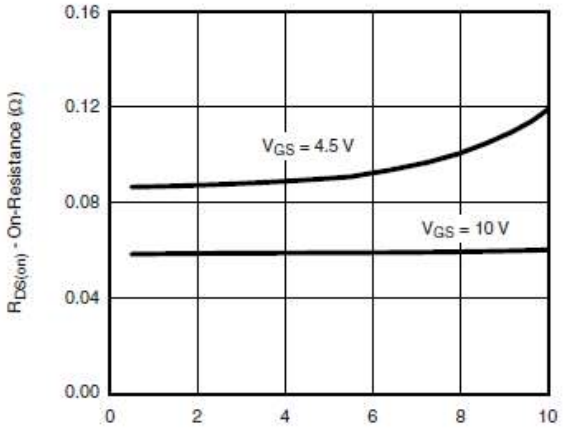
➢ N-Channel Typical Characteristics



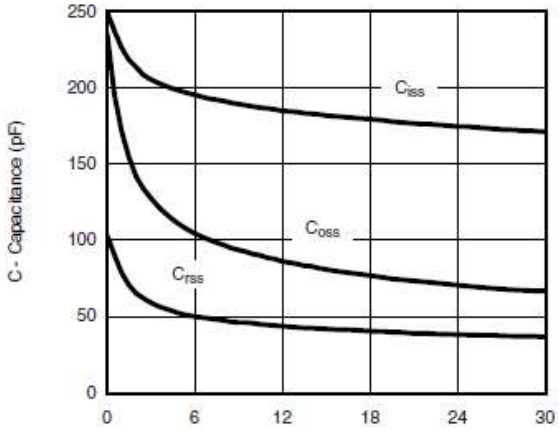
Output Characteristics



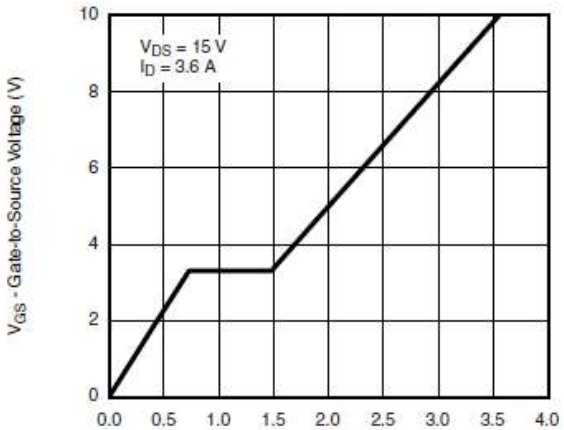
Transfer Characteristics



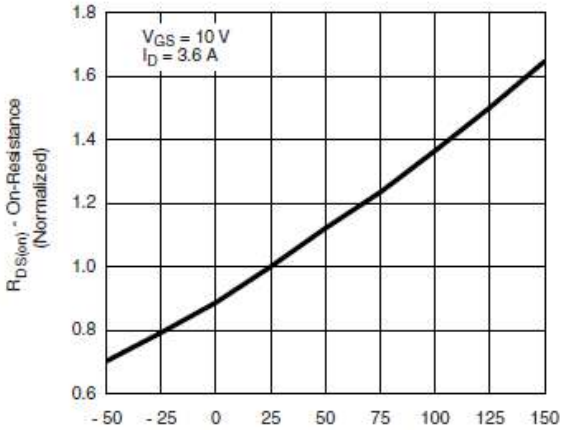
On-Resistance vs. Drain Current



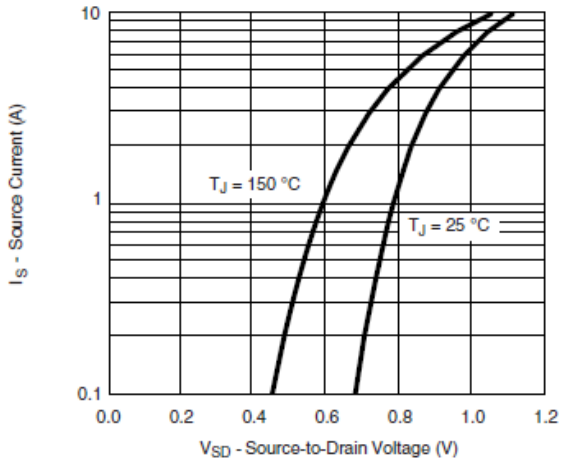
Capacitance



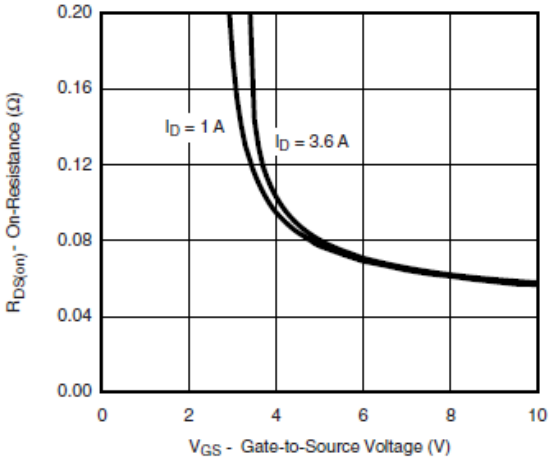
Gate Charge



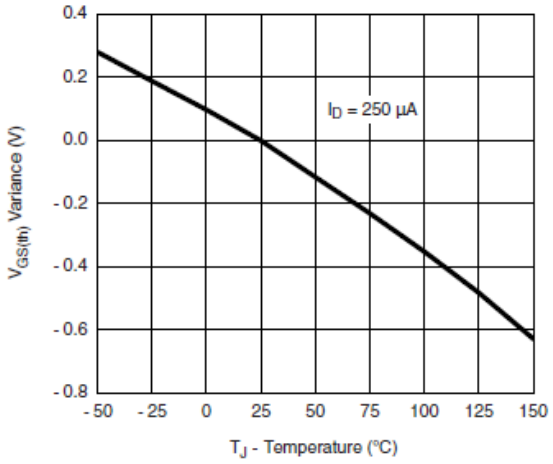
On-Resistance vs. Junction Temperature



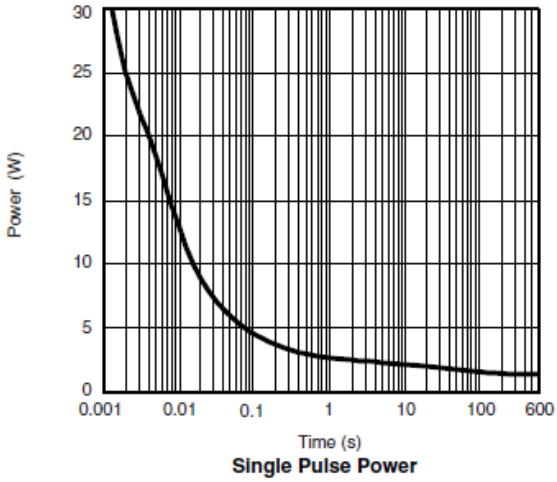
Source-Drain Diode Forward Voltage



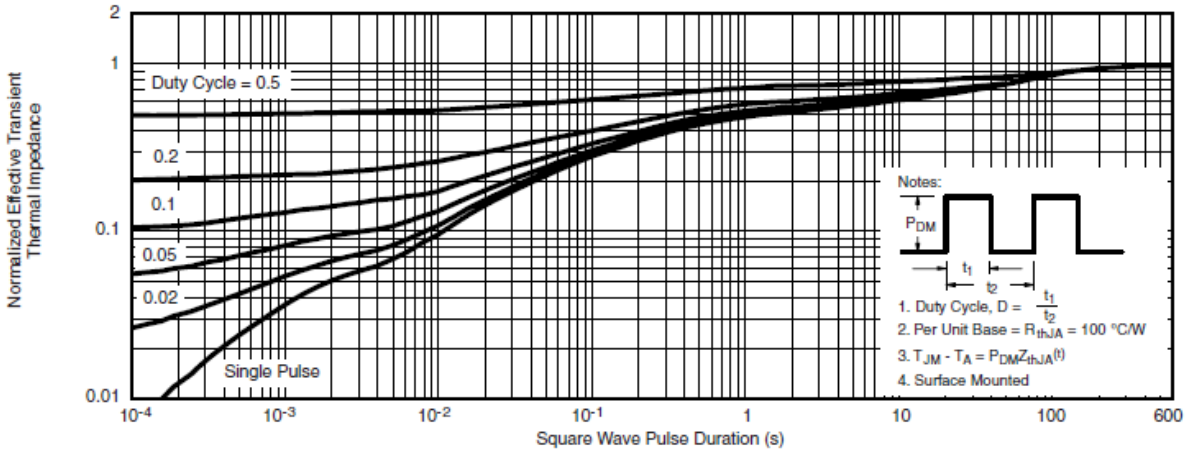
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

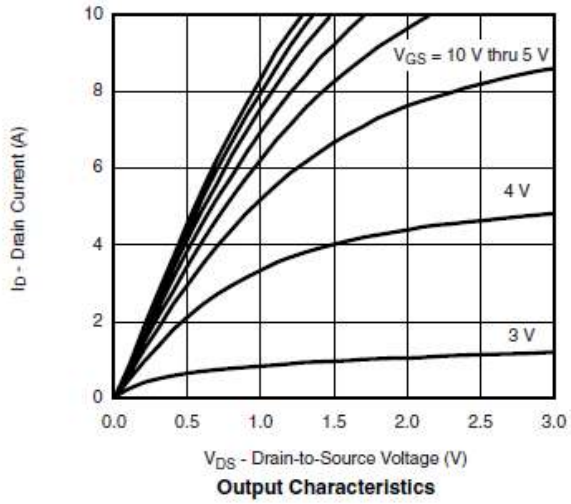


Single Pulse Power

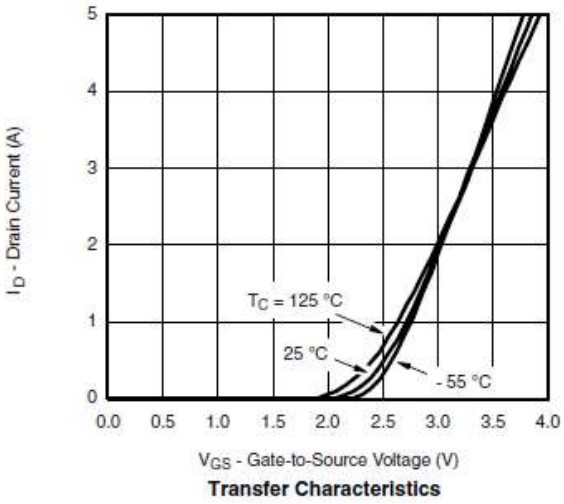


Normalized Thermal Transient Impedance, Junction-to-Ambient

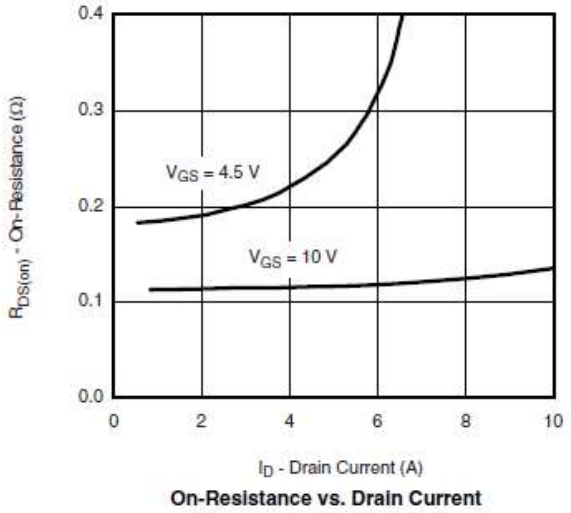
➢ P-Channel Typical Characteristics



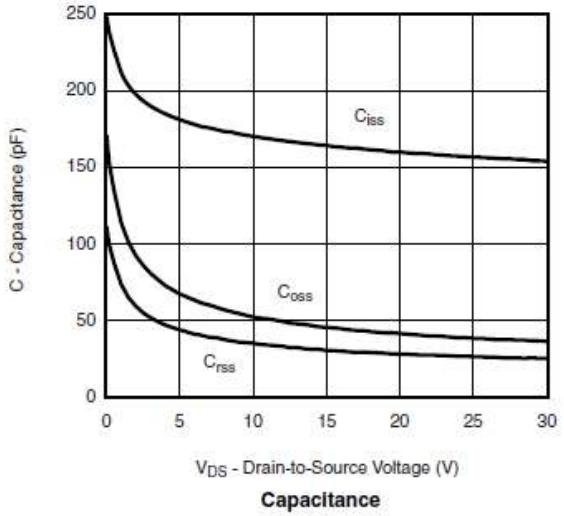
Output Characteristics



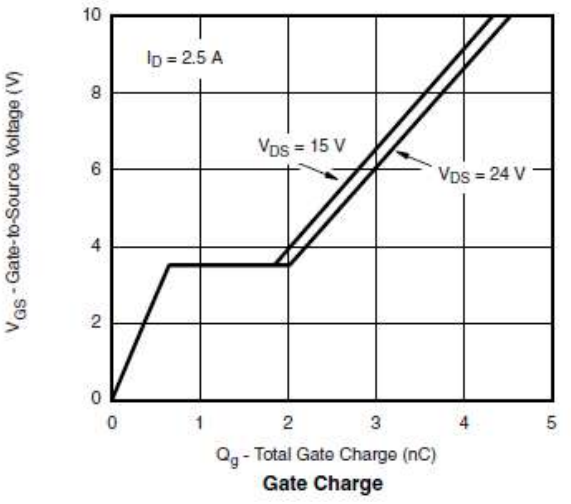
Transfer Characteristics



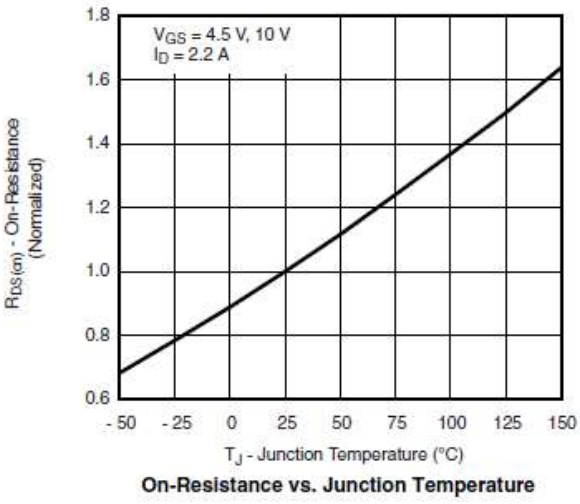
On-Resistance vs. Drain Current



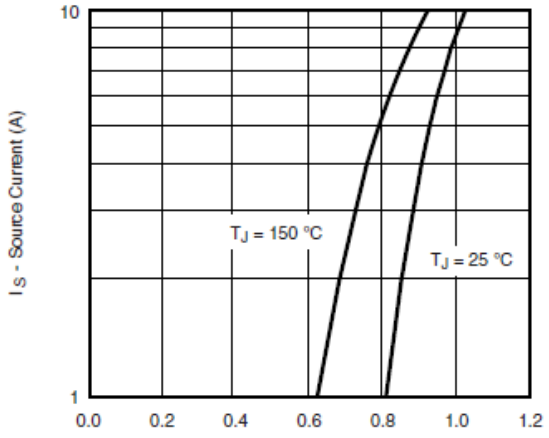
Capacitance



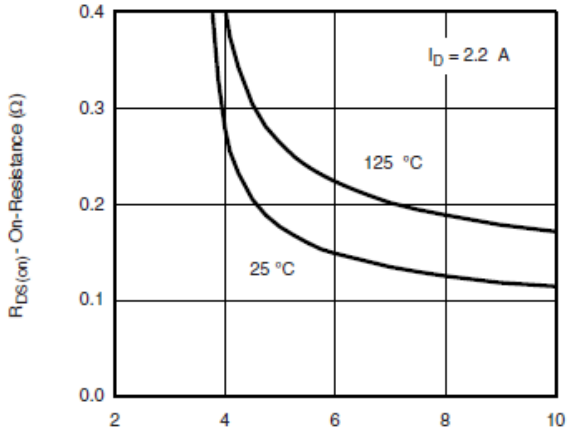
Gate Charge



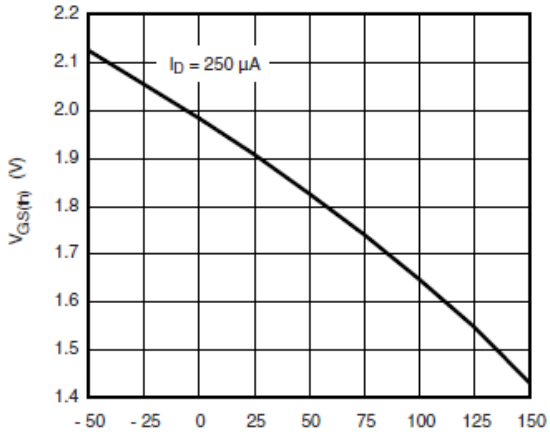
On-Resistance vs. Junction Temperature



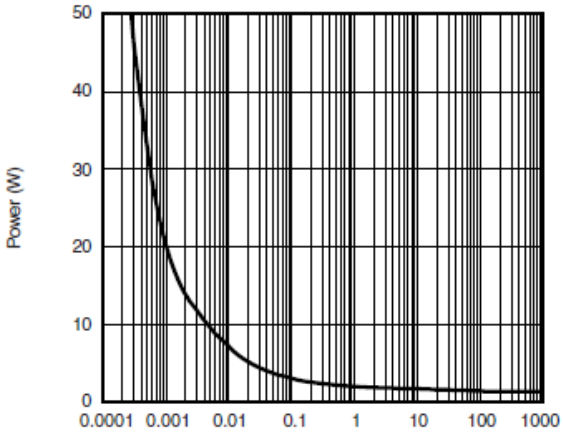
Source-Drain Diode Forward Voltage



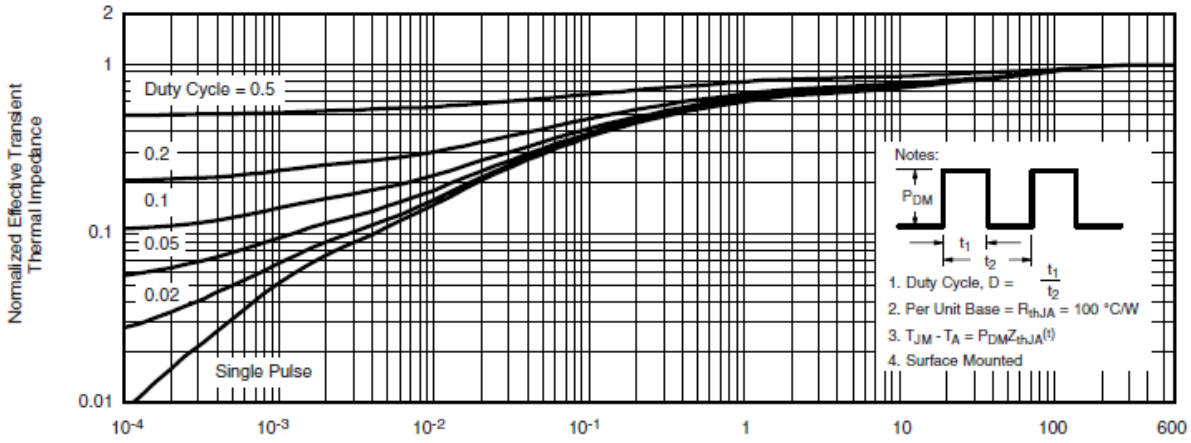
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

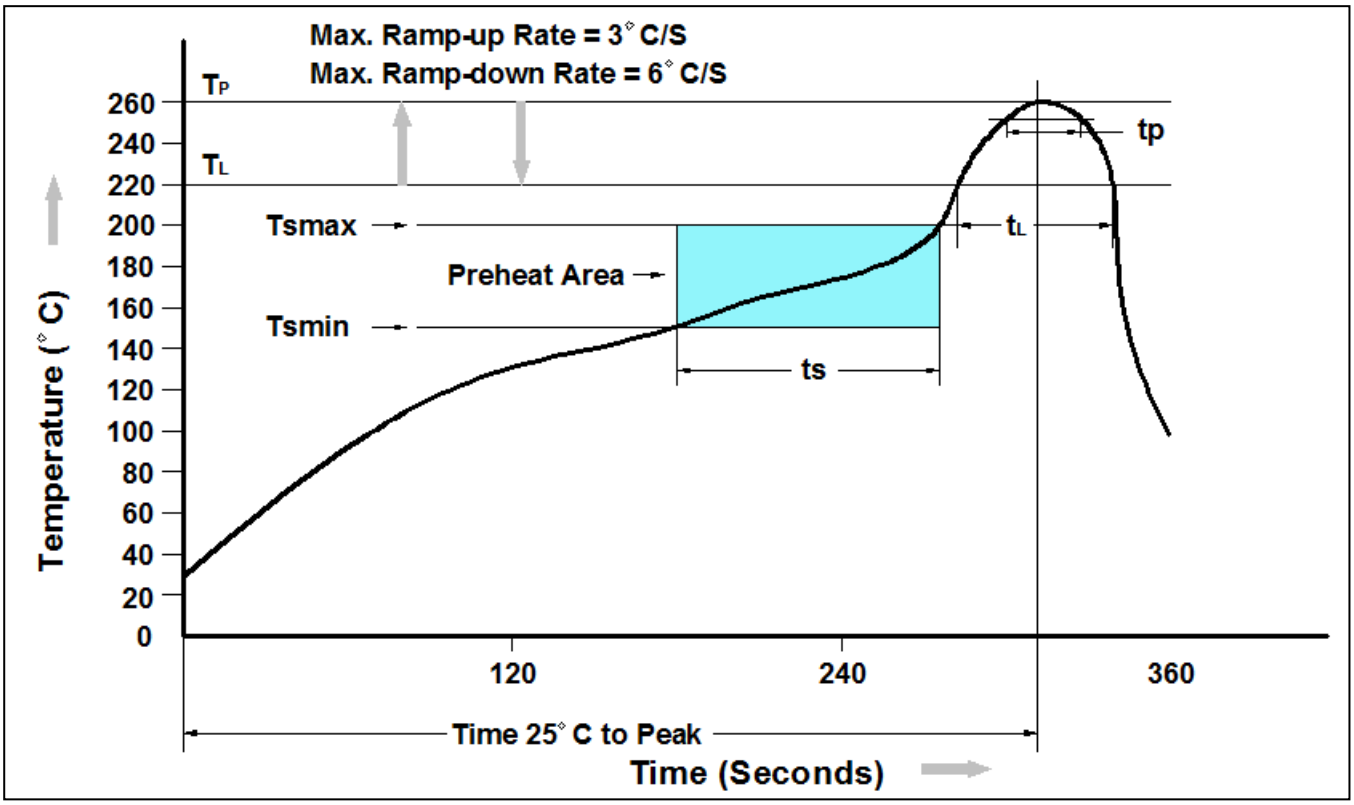


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

➢ Recommand IR Reflow Soldering Thermal Profile

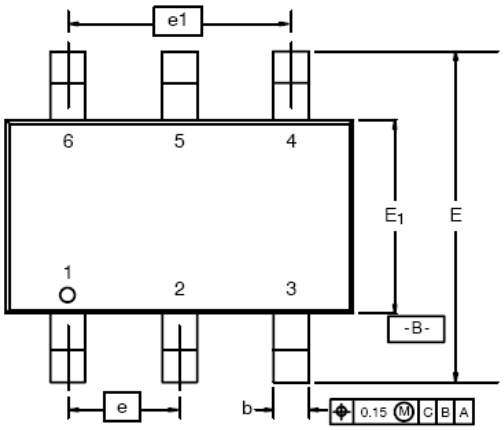


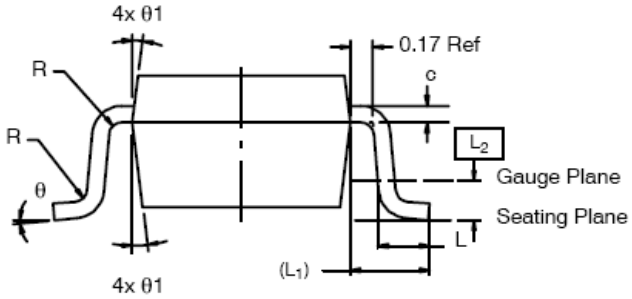
Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Average Ramp-up Rate (tL to tP)	3°C/second max.
Liquidous Temperature (TL)	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (tP) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➢ Ordering Information

Part Number	Description	Quantity
PAC3002C	TSOP-6 Reel	3000 pcs

➢ Package Information (TSOP-6)





Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A_1	0.01	-	0.10	0.0004	-	0.004
A_2	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E_1	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e_1	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L_1	0.60 Ref			0.024 Ref		
L_2	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ_1	7° Nom			7° Nom		

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- Though Paceleader make effort to improve product quality and reliability, Product can malfunction and fail due to their inherent electrical sensitivity and vulnerability to physical stress, it is the responsibility of the customer, when utilizing Paceleader products, to comply with the standards of safety in making a safe design for entire system and to avoid situation in which a malfunction or failure., In developing a new designs, customer should ensure that the device which shown in this documents are used within specified operating ranges.

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